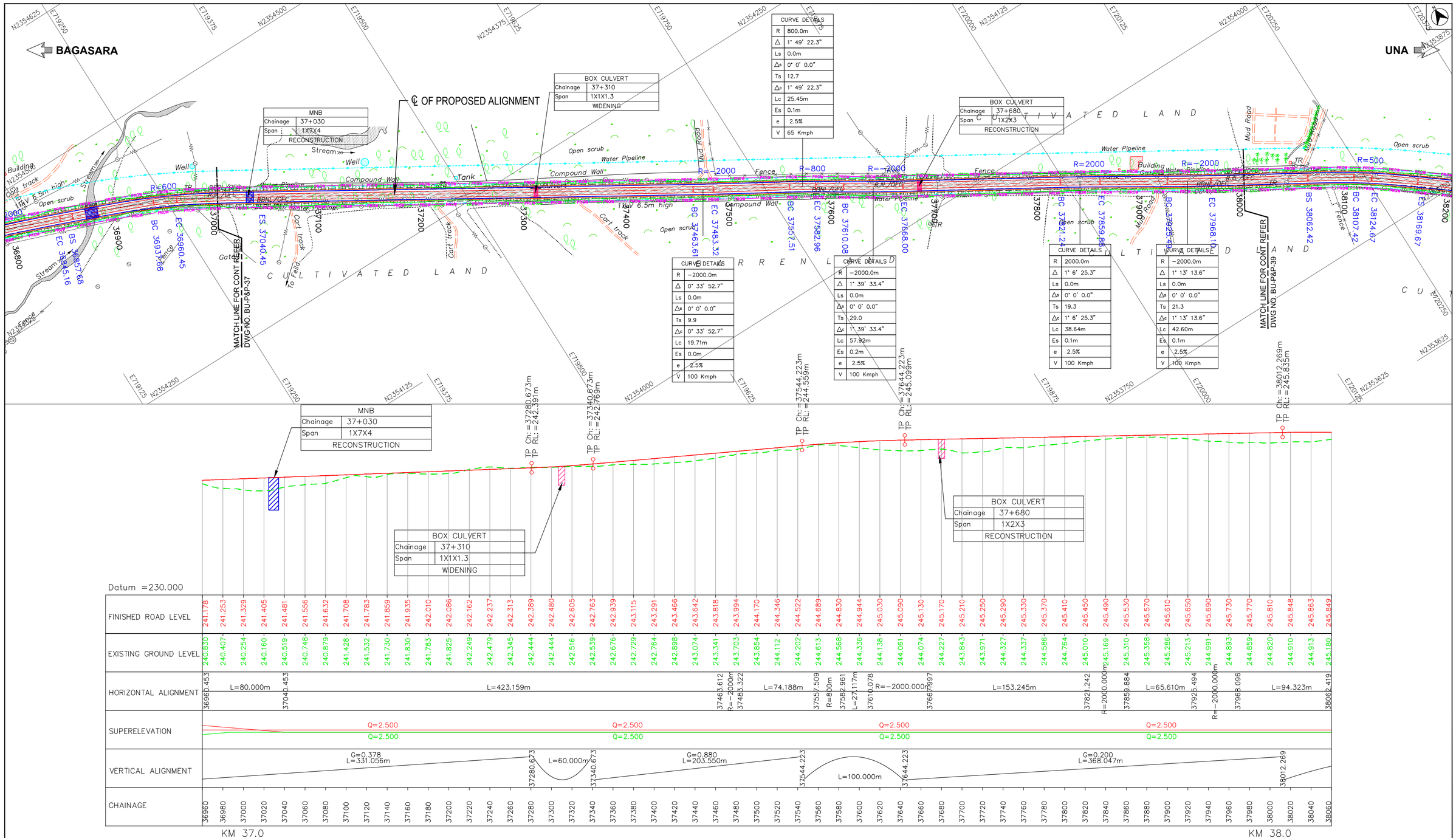

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-35 TO 40	SURYA KIRAN	SHIVAPRASAD	38 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

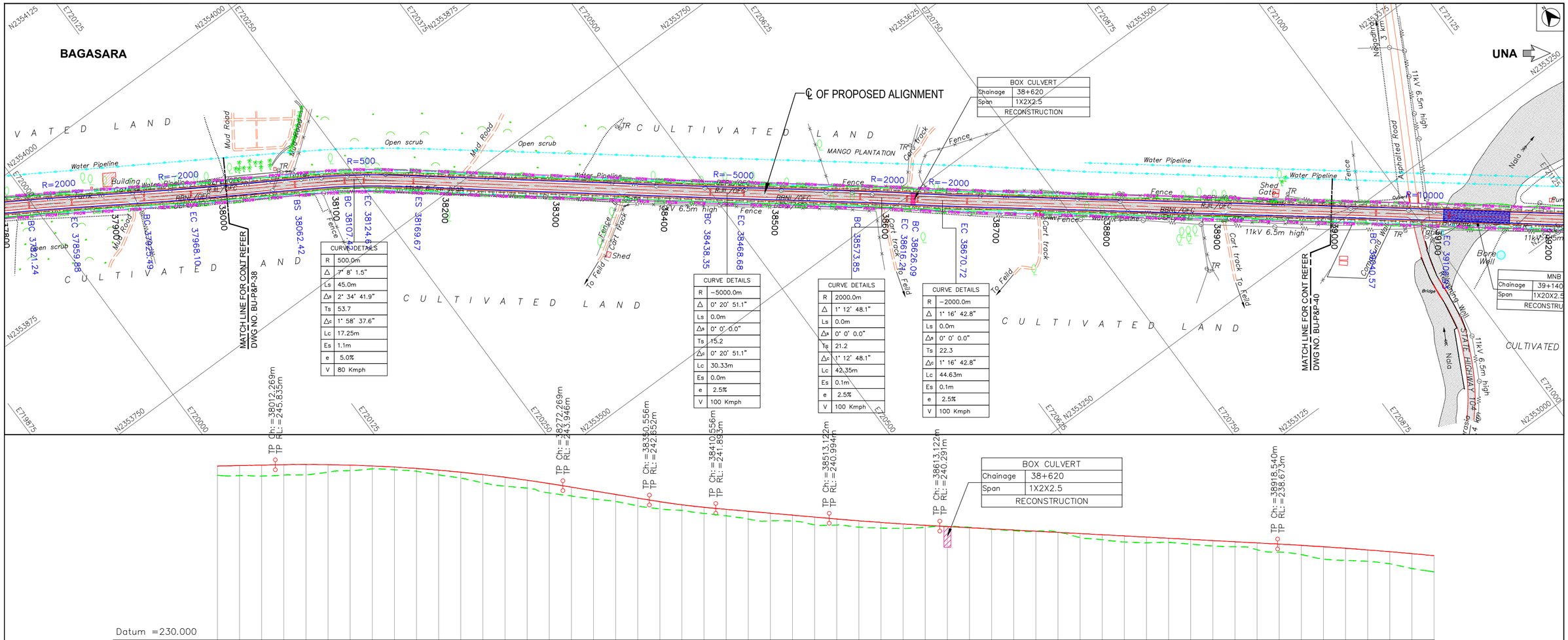
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 37/000 KM TO 38/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-38



LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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2. All dimensions are in meters.

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21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU-P&P-35 TO 40	SURYA KIRAN	SHIVAPRASAD	39 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

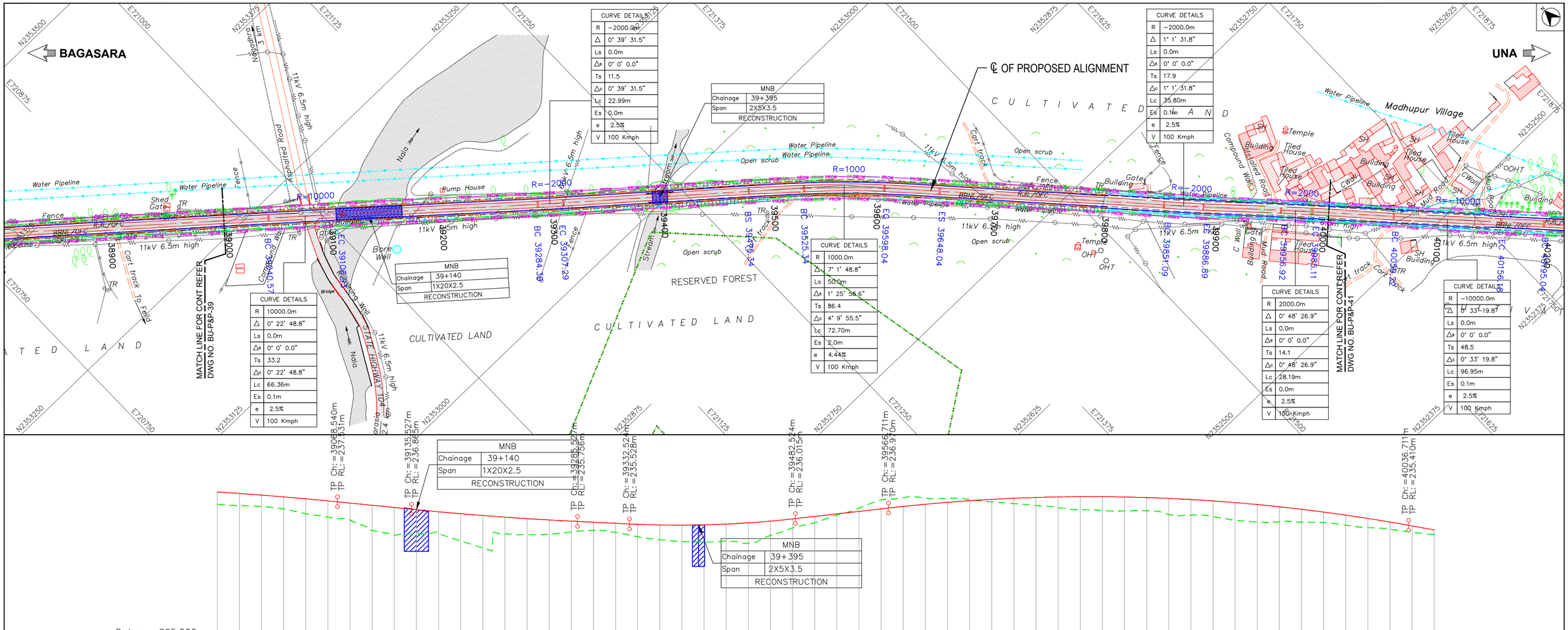
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 38/000 KM TO 39/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-39



FDPR

LEGEND

PROPOSED CENTRELINE	ROAD OVER BRIDGE	TOELINES FOR EMBANKMENT	
PROPOSED CARRIAGEWAY	BOX, PIPE CULVERTS	TOELINES FOR CUT	
PROPOSED SERVICE ROAD	VUP,PUP,LVUP,CUP	R	RADIUS
PROPOSED EARTHEN SHOULDER	VEHICULAR OVER PASS	Δ	INCLUDED ANGLE
PROPOSED DRAIN	PROPOSED CHAINAGE IN METRE 45	Ls	TRANSITION/SPIRAL LENGTH
PROPOSED ROW (PROW)	BEGINNING & END OF SPIRAL BS & ES	Δs	DEVIATION ANGLE OF TRANSITION CURVE
EXISTING ROW (EROW)	BEGINNING & END OF CURVE BC & EC	Ts	LENGTH OF TANGENT DISTANCE
EXISTING CARRIAGEWAY	RADIUS OF CURVE R=500	Δc	DEVIATION ANGLE OF CIRCULAR CURVE
ELEVATED HIGHWAY	PROPOSED BRIDGE	Lc	LENGTH OF CURVE
MAJOR BRIDGE, FLYOVER	EXISTING BRIDGE	Es	APEX DISTANCE
MINOR BRIDGE	PROPOSED CULVERT	e	SUPER ELEVATION
	EXISTING CULVERT	V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR : 1:2500 VER : 1:250
File name BU-P&P-35 TO 40	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 40 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

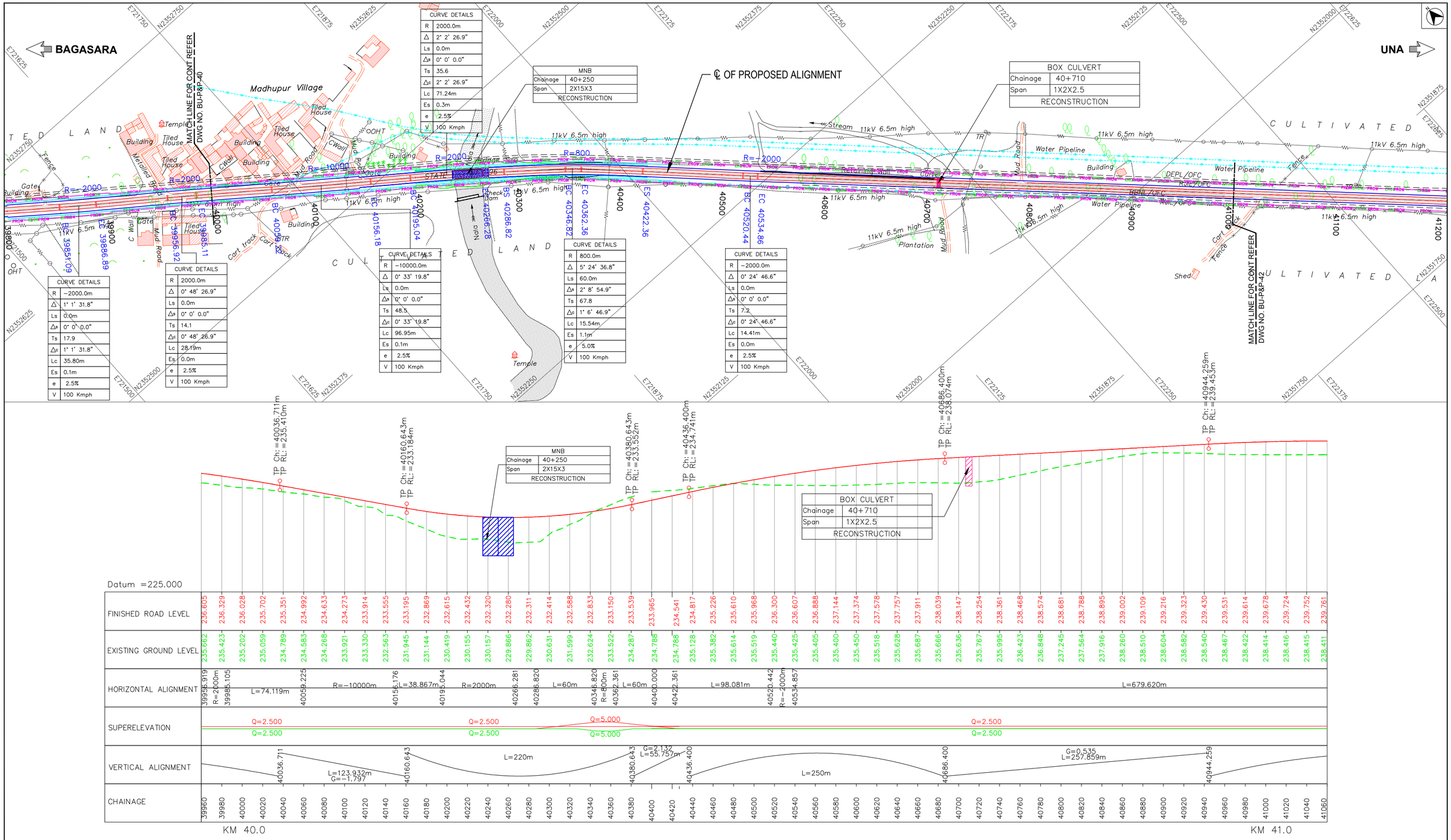
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 39/000 KM TO 40/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−40



CURVE DETAILS	
R	-2000.0m
Δ	1° 1' 31.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	17.9
Δc	1° 1' 31.8"
Lc	35.80m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	0° 48' 26.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	14.1
Δc	0° 48' 26.9"
Lc	28.19m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	2° 2' 26.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	35.6
Δc	2° 2' 26.9"
Lc	71.24m
Es	0.3m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	-10000.0m
Δ	0° 33' 19.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	48.5
Δc	0° 33' 19.8"
Lc	96.95m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	800.0m
Δ	5° 24' 36.8"
Ls	60.0m
Δs	2° 8' 54.9"
Ts	67.8
Δc	1° 6' 46.9"
Lc	15.54m
Es	1.1m
e	5.0%
V	100 Kmph

CURVE DETAILS	
R	-2000.0m
Δ	0° 24' 46.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	7.2
Δc	0° 24' 46.6"
Lc	14.41m
Es	0.0m
e	2.5%
V	100 Kmph

MNB	
Chainage	40+250
Span	2X15X3
RECONSTRUCTION	

BOX CULVERT	
Chainage	40+710
Span	1X2X2.5
RECONSTRUCTION	

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR : 1:2500 VER : 1:250
File name BU-P&P-41 TO 48	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 41 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

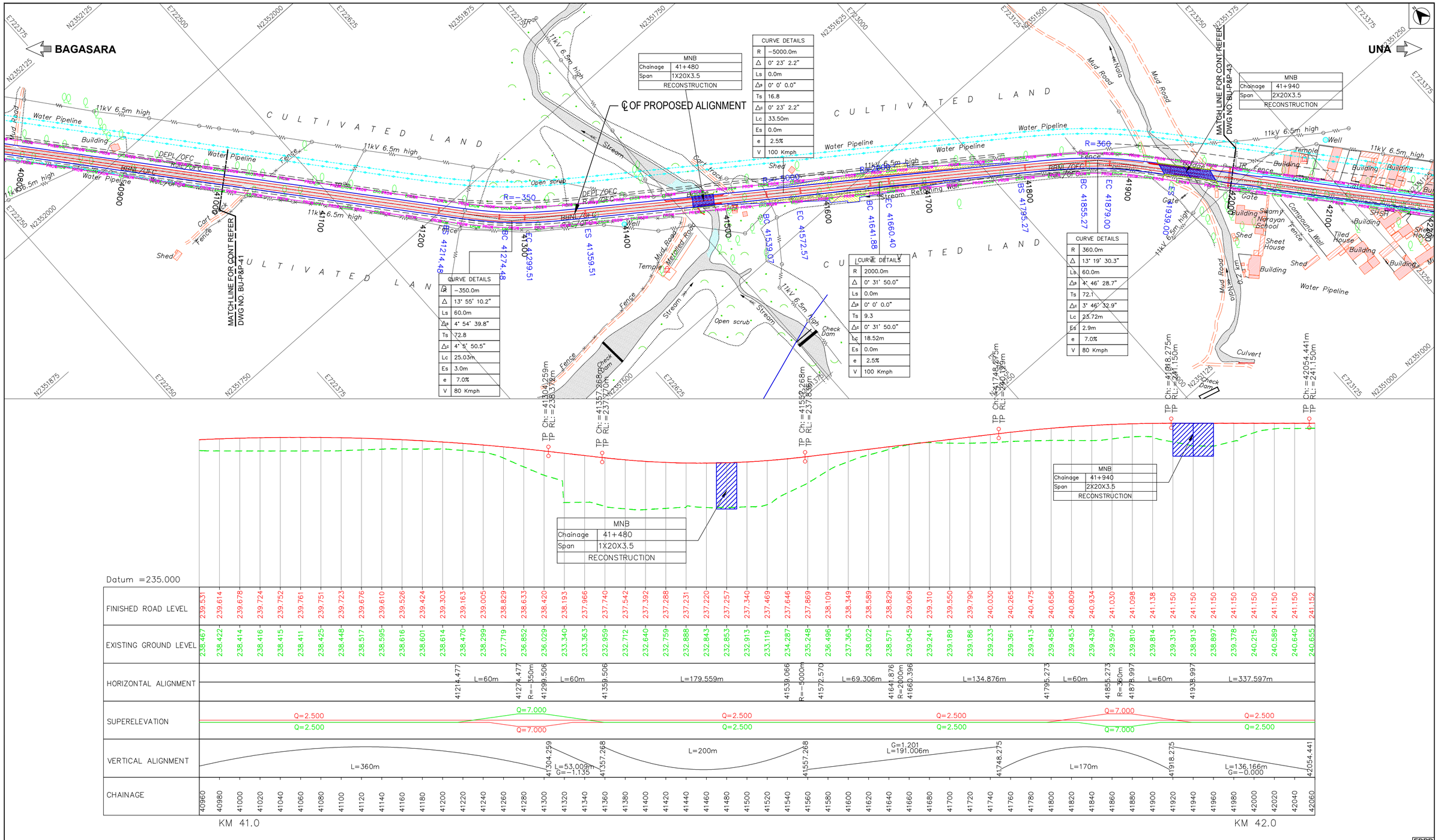
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 40/000 KM TO 41/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-41



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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File name BU-P&P-41 TO 48	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 42 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

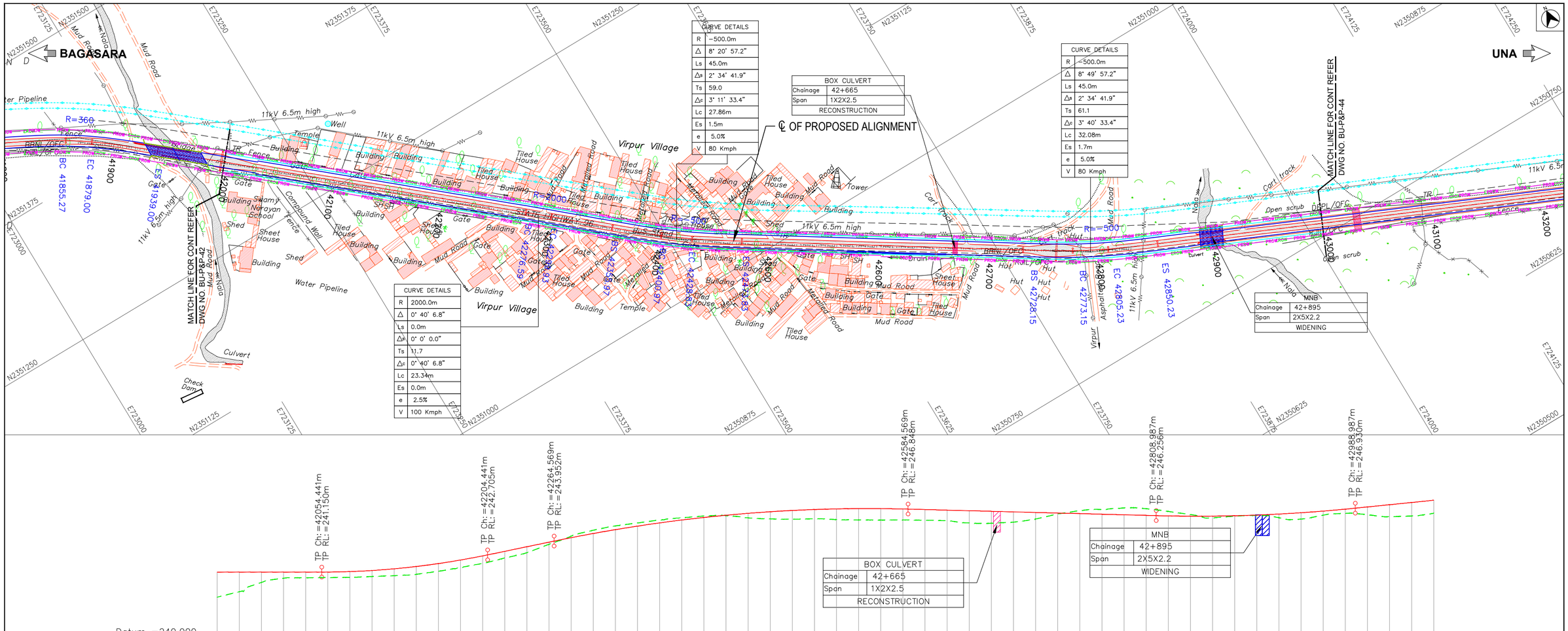
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 41/000 KM TO 42/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-42



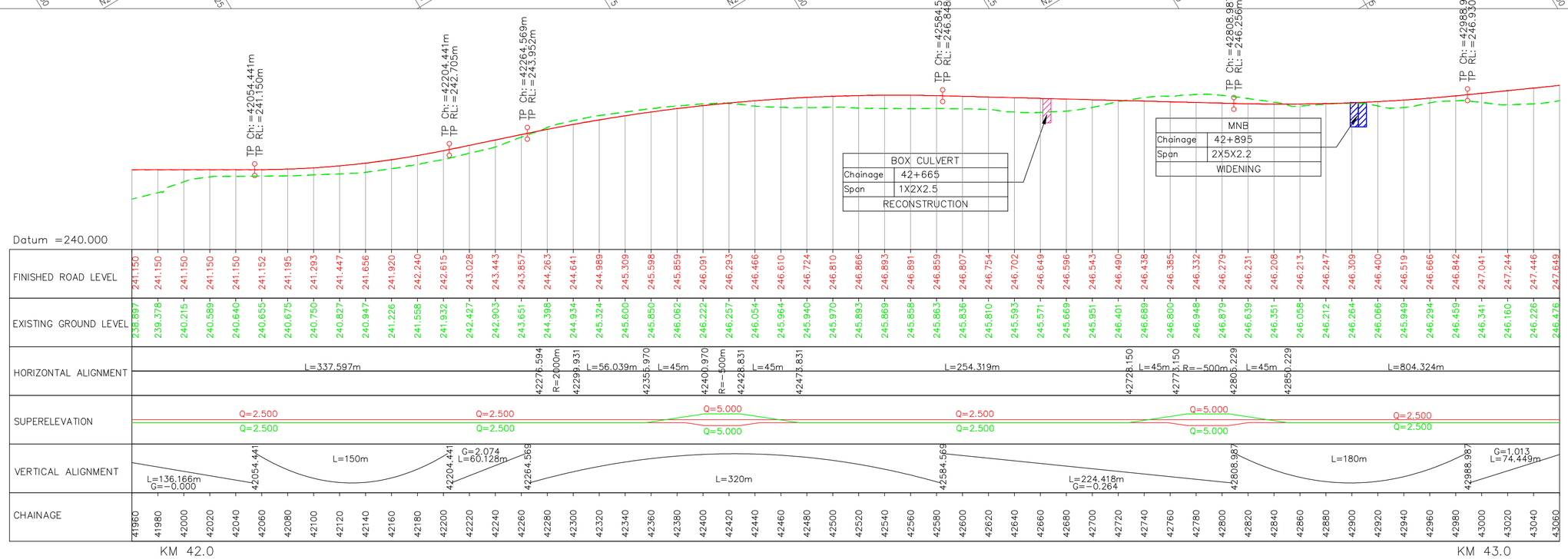
CURVE DETAILS	
R	-500.0m
Δ	8° 20' 57.2"
Ls	45.0m
Δs	2° 34' 41.9"
Ts	59.0
Δc	3° 11' 33.4"
Lc	27.86m
Es	1.5m
e	5.0%
V	80 Kmph

BOX CULVERT	
Chainage	42+665
Span	1X2X2.5
RECONSTRUCTION	

CURVE DETAILS	
R	-500.0m
Δ	8° 49' 57.2"
Ls	45.0m
Δs	2° 34' 41.9"
Ts	61.1
Δc	3° 40' 33.4"
Lc	32.08m
Es	1.7m
e	5.0%
V	80 Kmph

MNB	
Chainage	42+895
Span	2X5X2.2
WIDENING	

CURVE DETAILS	
R	2000.0m
Δ	0° 40' 6.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	11.7
Δc	0° 40' 6.8"
Lc	23.34m
Es	0.0m
e	2.5%
V	100 Kmph



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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File name BU-P&P-41 TO 48	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 43 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

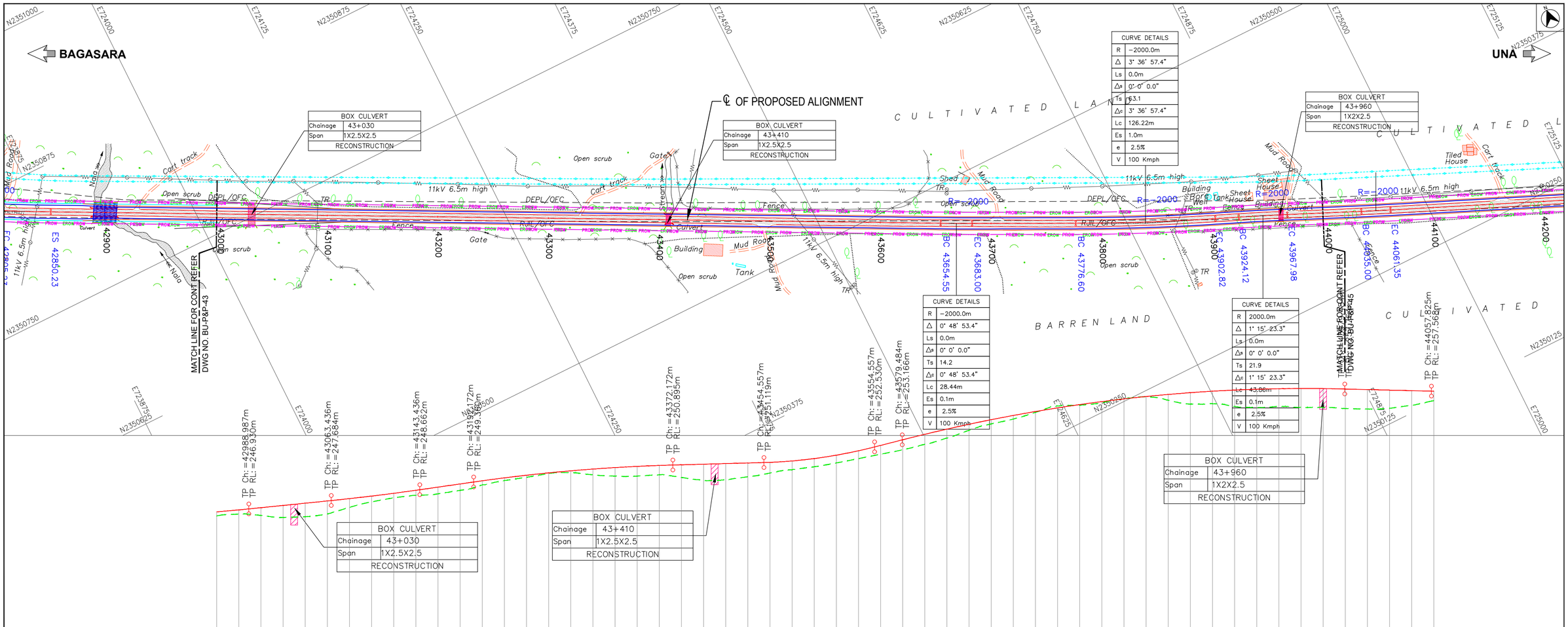
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 42/000 KM TO 43/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-43



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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- RL: Reduced Level

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File name	Designed by	Approved by	Sheets
BU-P&P-41 TO 48	SURYA KIRAN	SHIVAPRASAD	44 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

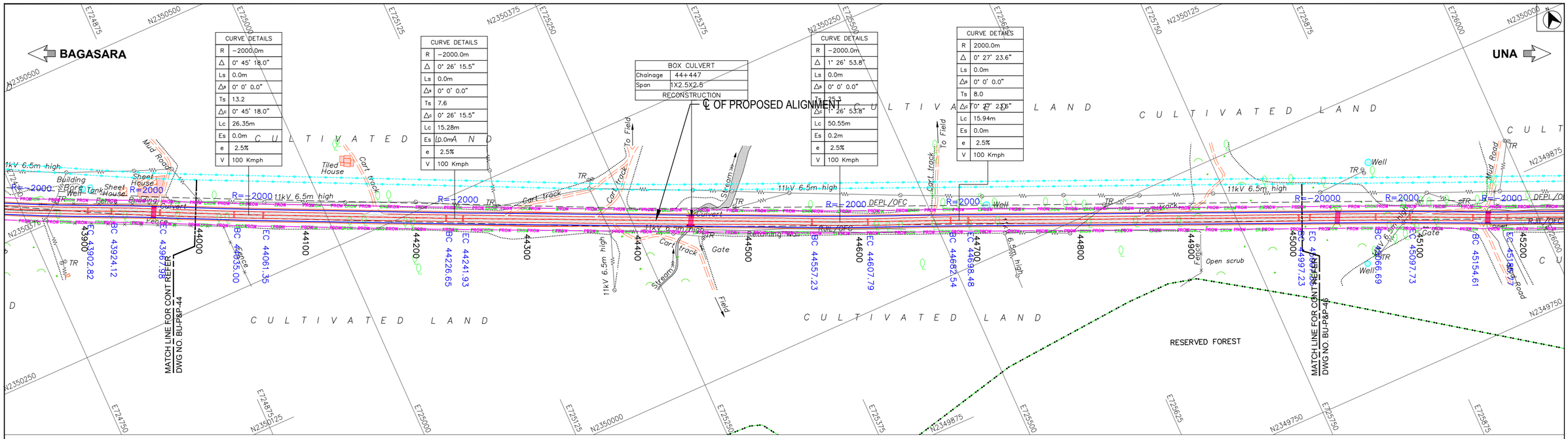
PROJECT

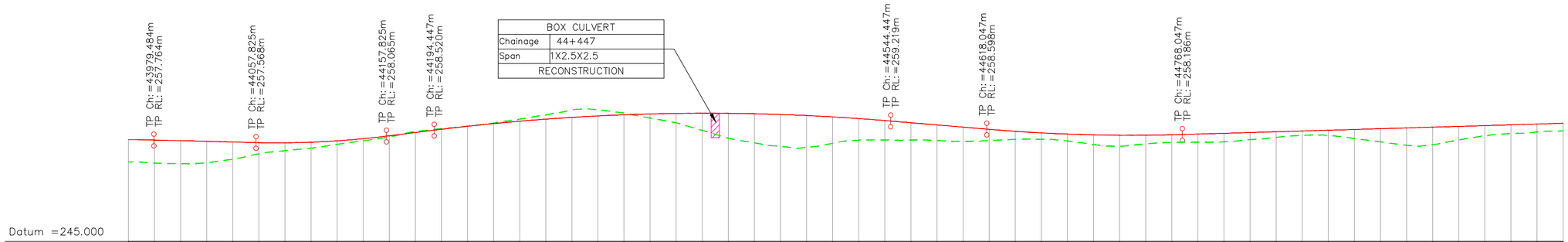
CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 43/000 KM TO 44/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-44





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FINISHED ROAD LEVEL	257.800, 257.763, 257.713, 257.663, 257.613, 257.563, 257.549, 257.595, 257.701, 257.867, 258.092, 258.340, 258.588, 258.818, 259.025, 259.207, 259.366, 259.501, 259.611, 259.698, 259.762, 259.801, 259.816, 259.808, 259.776, 259.720, 259.640, 259.536, 259.408, 259.256, 259.088, 258.919, 258.750, 258.582, 258.431, 258.311, 258.221, 258.161, 258.132, 258.133, 258.164, 258.221, 258.280, 258.339, 258.397, 258.456, 258.515, 258.574, 258.633, 258.692, 258.751, 258.809, 258.868, 258.927, 258.986, 259.045
EXISTING GROUND LEVEL	256.093, 255.996, 255.954, 256.027, 256.294, 256.712, 256.952, 257.146, 257.439, 257.710, 257.993, 258.410, 258.635, 258.831, 259.060, 259.367, 259.696, 260.062, 260.074, 259.821, 259.447, 259.077, 258.504, 257.902, 257.549, 257.278, 257.199, 257.508, 257.760, 257.771, 257.763, 257.715, 257.669, 257.724, 257.813, 257.826, 257.696, 257.422, 257.290, 257.467, 257.588, 257.596, 257.629, 257.800, 257.972, 258.111, 258.125, 257.884, 257.628, 257.362, 257.408, 257.776, 258.074, 258.262, 258.384, 258.465
HORIZONTAL ALIGNMENT	43967.980, L=67.019m, 44034.999, R=−2000m, 44061.353, L=165.301m, 44226.654, R=−2000m, 44241.931, L=315.301m, 44557.231, R=−2000m, 44607.786, L=74.756m, 44682.542, R=2000m, 44698.478, L=298.753m, 44997.231, R=−20000m, 45007.352, L=59.333m
SUPERELEVATION	Q=2.500 / Q=2.500 ; Q=2.500 / Q=2.500
VERTICAL ALIGNMENT	43979.484, L=78.341m G=−0.251, 44057.825, L=100m, 44157.825, G=1.244 L=36.621m, 44194.447, L=350m, 44544.447, L=73.600m G=−0.844, 44618.047, L=150m, 44768.047, G=0.294 L=374.195m
CHAINAGE	43960, 43980, 44000, 44020, 44040, 44060, 44080, 44100, 44120, 44140, 44160, 44180, 44200, 44220, 44240, 44260, 44280, 44300, 44320, 44340, 44360, 44380, 44400, 44420, 44440, 44460, 44480, 44500, 44520, 44540, 44560, 44580, 44600, 44620, 44640, 44660, 44680, 44700, 44720, 44740, 44760, 44780, 44800, 44820, 44840, 44860, 44880, 44900, 44920, 44940, 44960, 44980, 45000, 45020, 45040, 45060

KM 44.0 KM 45.0

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
1	10.12.24	Incorporating the suggestions Based on the meetings held with RO Gandhinagar & EE Rajkot on 25.09.24 & 24.10.24	JTP	SM	SNV
0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-41 TO 48	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 45 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

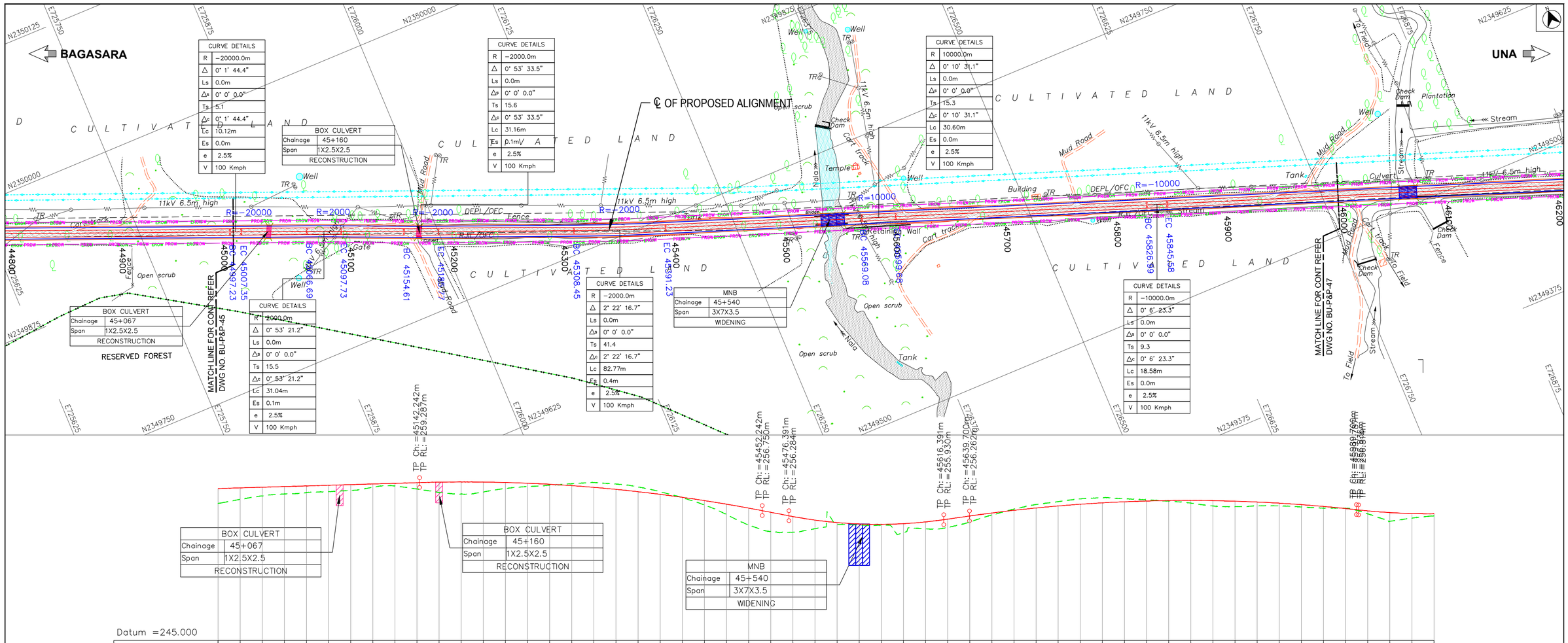
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 44/000 KM TO 45/000 KM

Plot Size : (A2 Size) DRG.NO : BU-P&P-45



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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Note:
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2. All dimensions are in meters.

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File name BU-P&P-41 TO 48	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 46 OF 88

CLIENT

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RAJKOT-360 001, GUJARAT

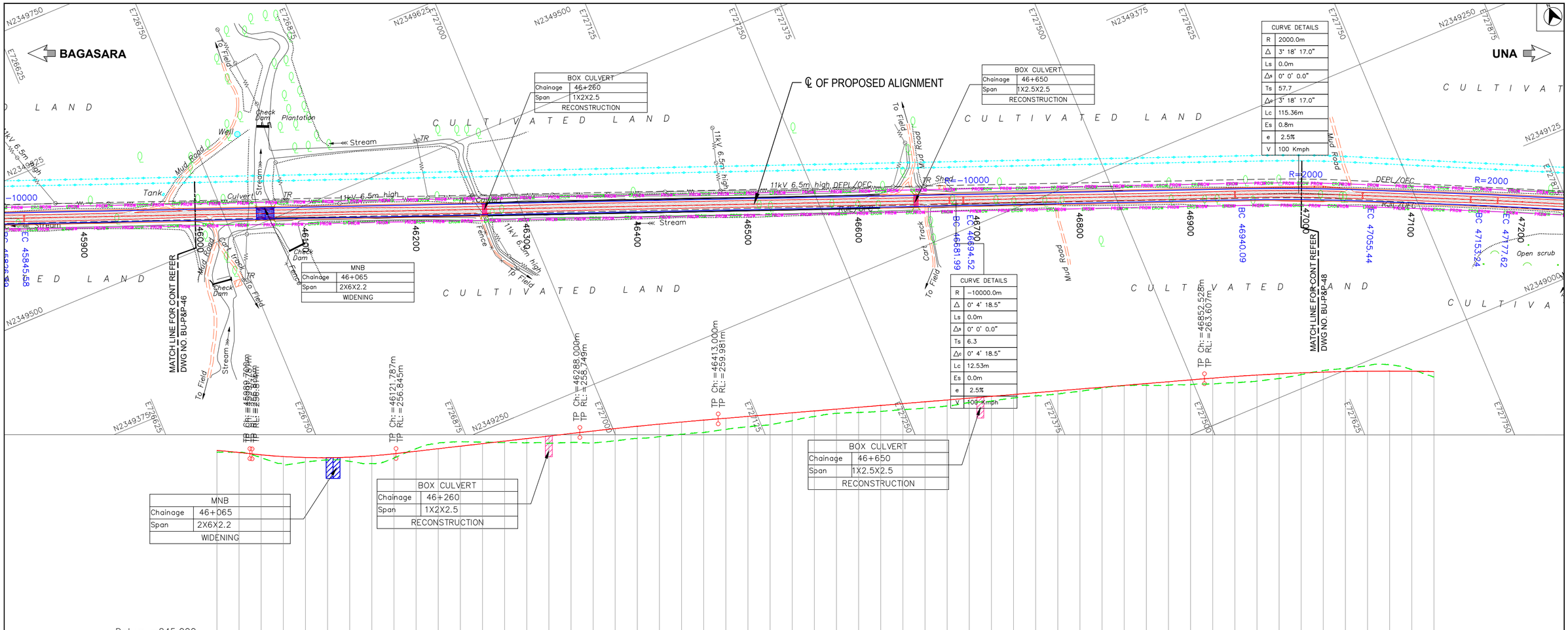
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 45/000 KM TO 46/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-46



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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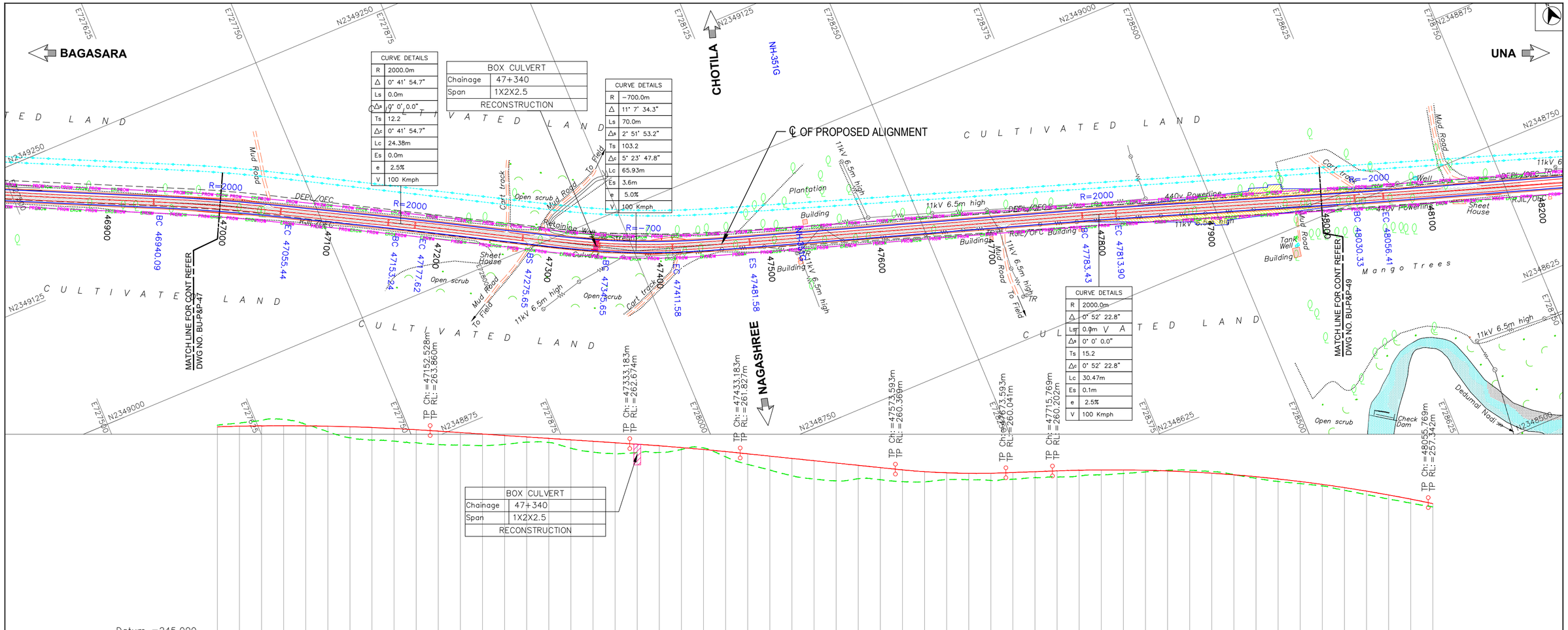
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 46/000 KM TO 47/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−47



CURVE DETAILS	
R	2000.0m
Δ	0° 41' 54.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	12.2
Δc	0° 41' 54.7"
Lc	24.38m
Es	0.0m
e	2.5%
V	100 Kmph

BOX CULVERT	
Chainage	47+340
Span	1X2X2.5
RECONSTRUCTION	

CURVE DETAILS	
R	-700.0m
Δ	11° 7' 34.3"
Ls	70.0m
Δs	2° 51' 53.2"
Ts	103.2
Δc	5° 23' 47.8"
Lc	65.93m
Es	3.6m
e	5.0%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	0° 52' 22.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	15.2
Δc	0° 52' 22.8"
Lc	30.47m
Es	0.1m
e	2.5%
V	100 Kmph

BOX CULVERT	
Chainage	47+340
Span	1X2X2.5
RECONSTRUCTION	

Datum =245.000

FINISHED ROAD LEVEL	
46960	264.208
46980	264.257
47000	264.286
47020	264.296
47040	264.285
47060	264.255
47080	264.206
47100	264.136
47120	264.047
47140	263.938
47160	263.811
47180	263.679
47200	263.548
47220	263.417
47240	263.286
47260	263.154
47280	263.023
47300	262.892
47320	262.761
47340	262.628
47360	262.484
47380	262.325
47400	262.150
47420	261.960
47440	261.756
47460	261.548
47480	261.341
47500	261.133
47520	260.926
47540	260.718
47560	260.510
47580	260.306
47600	260.144
47620	260.040
47640	259.993
47660	260.002
47680	260.066
47700	260.142
47720	260.218
47740	260.274
47760	260.301
47780	260.299
47800	260.269
47820	260.210
47840	260.122
47860	260.005
47880	259.859
47900	259.685
47920	259.482
47940	259.250
47960	258.989
47980	258.700
48000	258.381
48020	258.034
48040	257.658
48060	257.254

EXISTING GROUND LEVEL	
46960	264.347
46980	264.545
47000	264.790
47020	264.868
47040	264.417
47060	263.768
47080	263.215
47100	262.996
47120	262.904
47140	262.766
47160	262.591
47180	262.548
47200	262.488
47220	262.616
47240	262.819
47260	262.781
47280	262.264
47300	261.916
47320	261.772
47340	261.859
47360	261.884
47380	262.149
47400	262.293
47420	261.489
47440	260.799
47460	260.281
47480	259.783
47500	259.475
47520	259.316
47540	259.507
47560	259.413
47580	259.236
47600	259.219
47620	259.419
47640	259.415
47660	259.348
47680	259.457
47700	259.606
47720	259.665
47740	259.758
47760	259.864
47780	259.979
47800	260.123
47820	260.271
47840	260.274
47860	260.153
47880	259.882
47900	259.551
47920	259.251
47940	259.065
47960	258.852
47980	258.452
48000	258.069
48020	257.672
48040	257.294
48060	256.954

HORIZONTAL ALIGNMENT	
R=2000m	47055.441
L=97.800m	47153.242
R=2000m	47177.625
L=98.027m	47275.652
L=70m	47345.652
R=-700m	47411.584
L=70m	47481.584
L=301.846m	47783.430
R=2000m	47813.903
L=216.428m	48030.331
R=-2000m	48056.414

SUPERELEVATION	
46960	Q=2.500
47000	Q=2.500
47340	Q=5.000
47380	Q=5.000
47480	Q=2.500
47780	Q=2.500
47880	Q=2.500
48060	Q=2.500

VERTICAL ALIGNMENT	
L=300m	47152.528
L=180.655m G=-0.656	47333.183
L=100m	47433.183
L=140.410m G=-1.038	47573.593
L=100m	47673.593
G=0.382 L=42.176m	47715.769
L=340m	48055.769

KM 47.0

KM 48.0

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
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- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

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SECON

PLAN & PROFILE (NH-351K)
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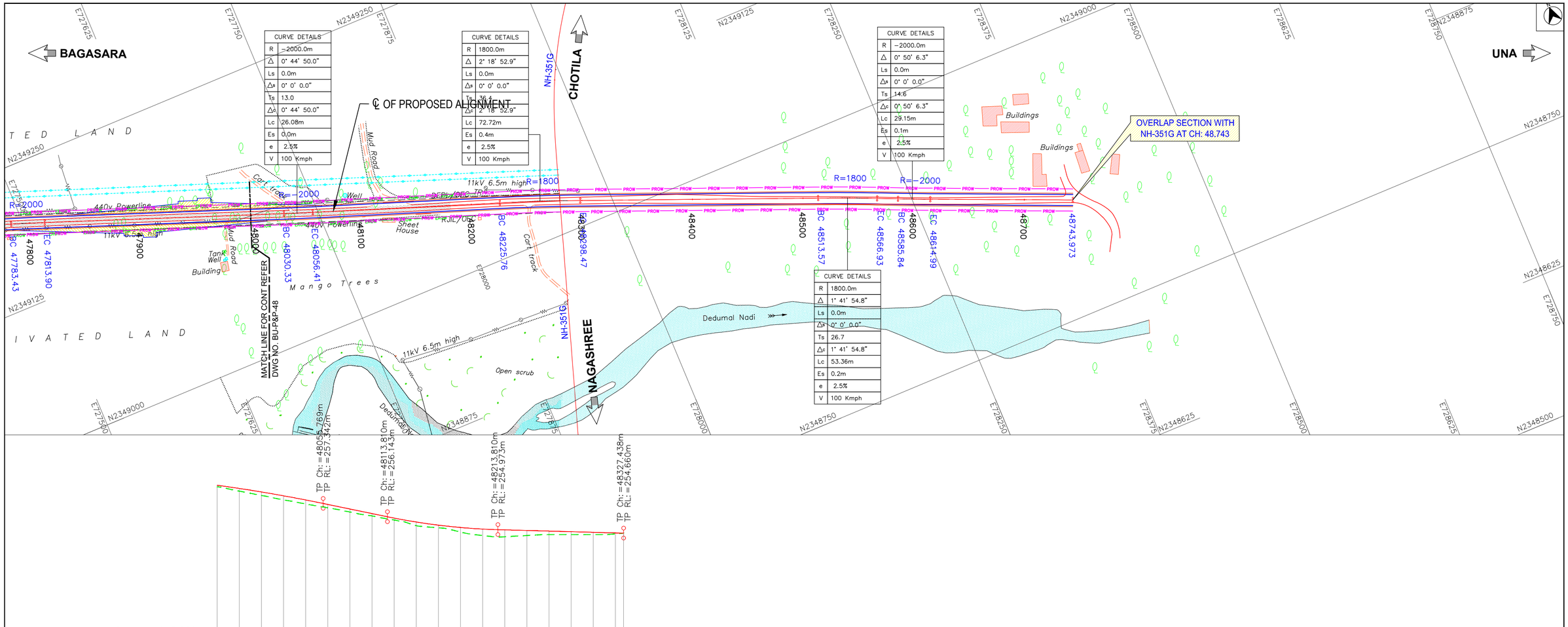
CHAINAGE : FROM 47/000 KM TO 48/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-48

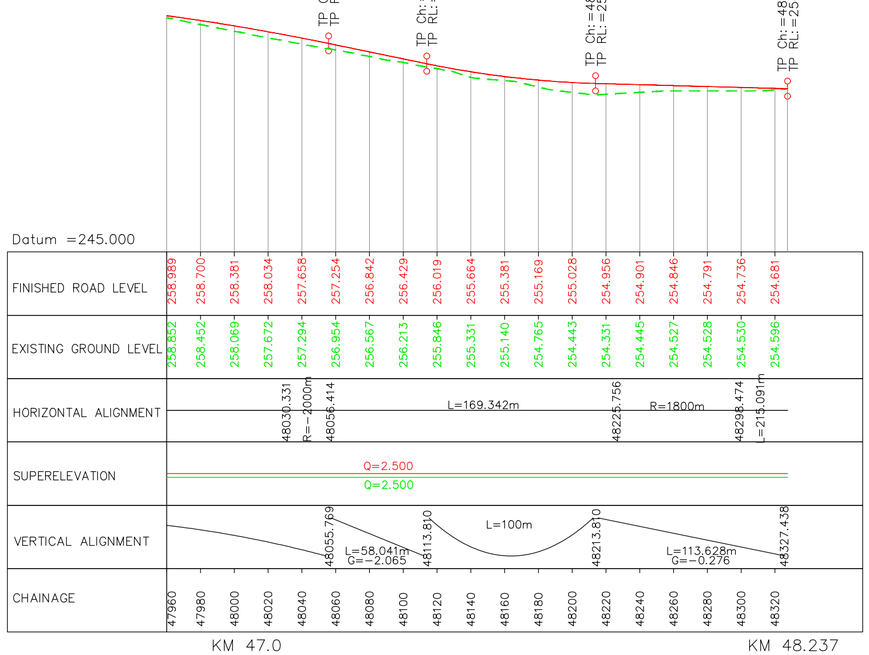


CURVE DETAILS	
R	−2000.0m
△	0° 44' 50.0"
Ls	0.0m
△s	0° 0' 0.0"
Ts	13.0
△c	0° 44' 50.0"
Lc	26.08m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	1800.0m
△	2° 18' 52.9"
Ls	0.0m
△s	0° 0' 0.0"
Ts	36.4
△c	2° 18' 52.9"
Lc	72.72m
Es	0.4m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
△	0° 50' 6.3"
Ls	0.0m
△s	0° 0' 0.0"
Ts	14.6
△c	0° 50' 6.3"
Lc	29.15m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	1800.0m
△	1° 41' 54.8"
Ls	0.0m
△s	0° 0' 0.0"
Ts	26.7
△c	1° 41' 54.8"
Lc	53.36m
Es	0.2m
e	2.5%
V	100 Kmph



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
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R	RADIUS
△	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
△s	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
△c	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
1	10.12.24	Incorporating the suggestions Based on the meetings held with RO Gandhinagar & EE Rajkot on 25.09.24 & 24.10.24	JTP	SM	SNV
0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU-P&P-41 TO 48	SURYA KIRAN	SHIVAPRASAD	48A OF 88

SECON

CLIENT

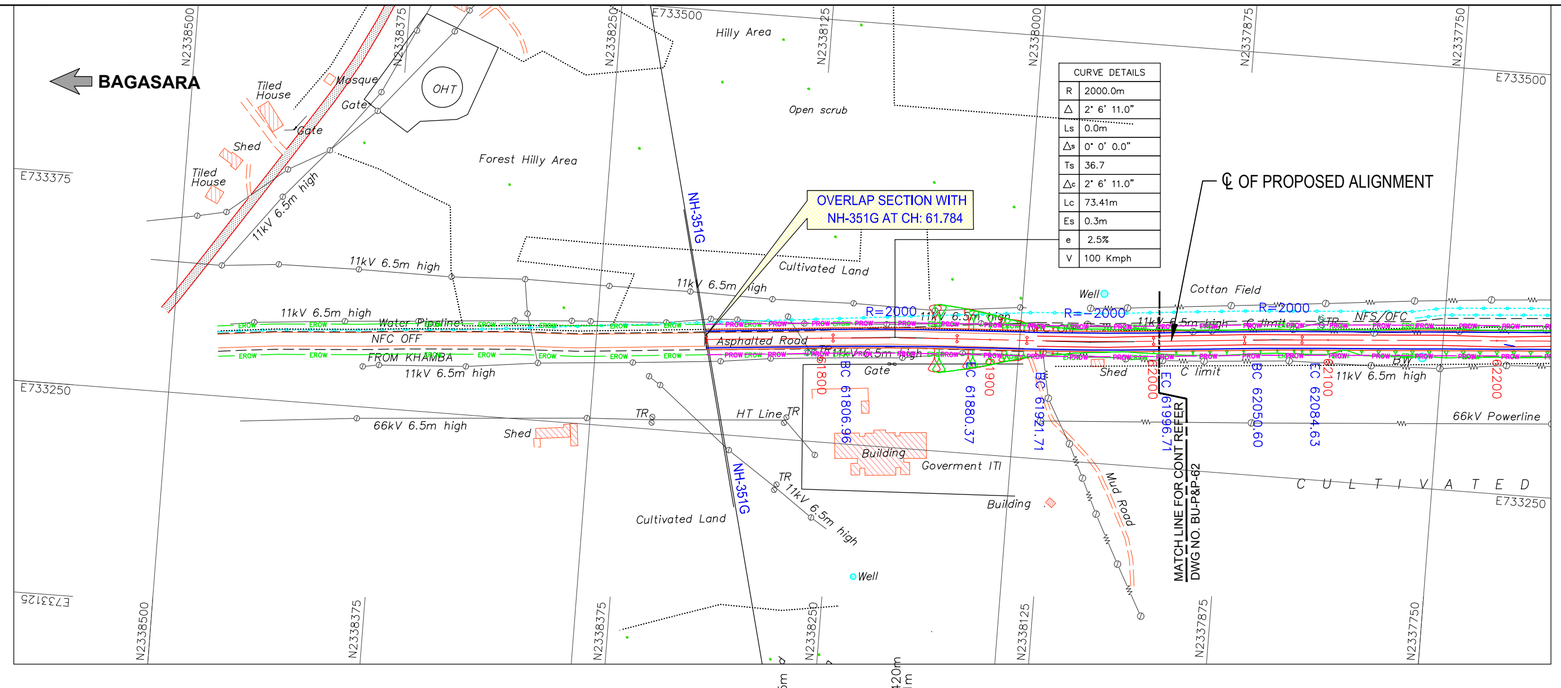
NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT

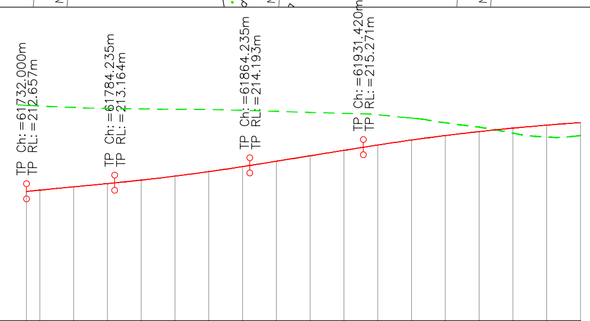
CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 48/000 KM TO 48/743 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-48A



CURVE DETAILS	
R	2000.0m
Δ	2° 6' 11.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	36.7
Δc	2° 6' 11.0"
Lc	73.41m
Es	0.3m
e	2.5%
V	100 Kmph



Datum =205.000

FINISHED ROAD LEVEL	212.657	212.735	212.929	213.123	213.326	213.561	213.828	214.126	214.446	214.767	215.088	215.406	215.700	215.964	216.199	216.405	216.582	216.730
EXISTING GROUND LEVEL		216.785	216.775	216.765	216.758	216.753	216.748	216.738	216.735	216.732	216.728	216.725	216.721	216.463	216.109	215.875	215.962	
HORIZONTAL ALIGNMENT	61732.000	L=74.965m	61806.965	R=2000m	61880.375	L=41.334m	61921.709	R=-2000m	61996.709	L=53.889m	62050.599							
SUPERELEVATION	Q=2.500																	
	Q=2.500																	
VERTICAL ALIGNMENT	61732.000	G=0.970 L=52.235m	61784.235	L=80m	61864.235	G=1.604 L=67.185m	61931.420	L=250m										
CHAINAGE	61732	61740	61760	61780	61800	61820	61840	61860	61880	61900	61920	61940	61960	61980	62000	62020	62040	62060

KM 61.0 KM 61.784 KM 62.0

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-48A TO 55A	SURYA KIRAN	SHIVAPRASAD	48 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

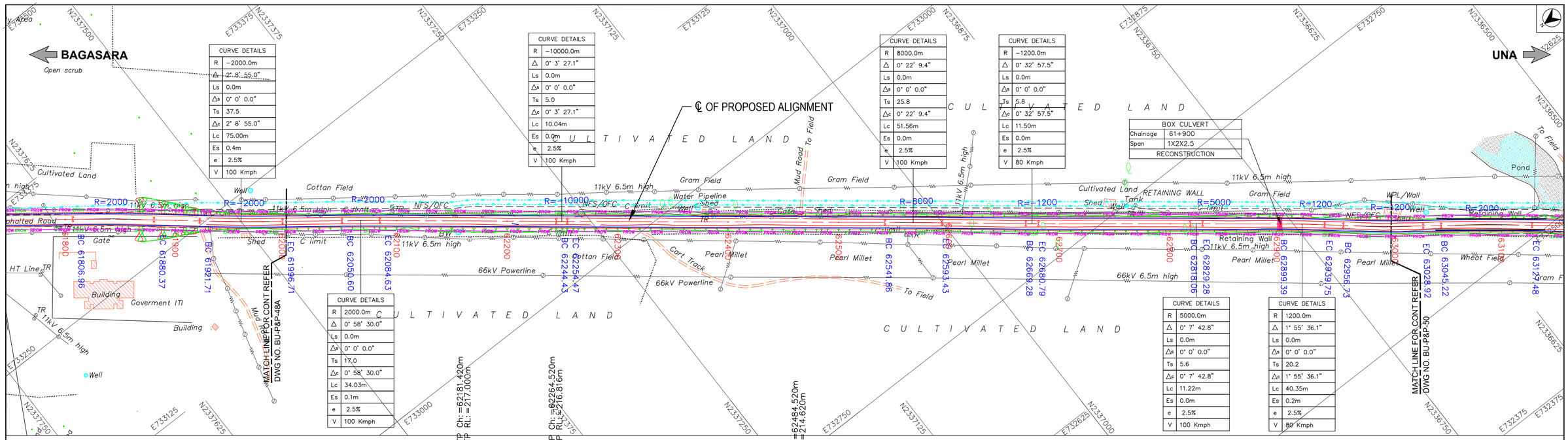
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 61/784 KM TO 62/000 KM

Plot Size : (A2 Size) DRG.NO : BU-P&P-48B



CURVE DETAILS	
R	−2000.0m
Δ	2° 8' 55.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	37.5
Δc	2° 8' 55.0"
Lc	75.00m
Es	0.4m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	0° 58' 30.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	17.0
Δc	0° 58' 30.0"
Lc	34.03m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−10000.0m
Δ	0° 3' 27.1"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.0
Δc	0° 3' 27.1"
Lc	10.04m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	8000.0m
Δ	0° 22' 9.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	25.8
Δc	0° 22' 9.4"
Lc	51.56m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−1200.0m
Δ	0° 32' 57.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.8
Δc	0° 32' 57.5"
Lc	11.50m
Es	0.0m
e	2.5%
V	80 Kmph

BOX CULVERT	
Chainage	61+900
Span	1X2X2.5
RECONSTRUCTION	

CURVE DETAILS	
R	5000.0m
Δ	0° 7' 42.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.6
Δc	0° 7' 42.8"
Lc	11.22m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	1200.0m
Δ	1° 55' 36.1"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	20.2
Δc	1° 55' 36.1"
Lc	40.35m
Es	0.2m
e	2.5%
V	80 Kmph

BOX CULVERT	
Chainage	62+900
Span	1X2X2.5
RECONSTRUCTION	

Datum =205.000

CHAINAGE	FINISHED ROAD LEVEL	EXISTING GROUND LEVEL
61960	215.700	999.000
61980	215.964	216.721
62000	216.199	216.463
62020	216.405	216.109
62040	216.582	215.875
62060	216.730	215.962
62080	216.848	216.194
62100	216.938	216.703
62120	216.998	216.600
62140	217.029	216.066
62160	217.030	215.806
62180	217.003	216.033
62200	216.958	216.195
62220	216.914	216.272
62240	216.870	216.529
62260	216.826	216.508
62280	216.773	216.460
62300	216.693	216.593
62320	216.584	216.710
62340	216.448	216.517
62360	216.283	216.156
62380	216.089	215.780
62400	215.868	215.310
62420	215.618	215.006
62440	215.340	214.648
62460	215.034	214.130
62480	214.700	213.705
62500	214.345	213.409
62520	213.990	213.200
62540	213.635	213.001
62560	213.281	212.768
62580	212.926	212.461
62600	212.571	212.071
62620	212.216	211.752
62640	211.861	211.454
62660	211.506	211.120
62680	211.151	210.621
62700	210.796	210.210
62720	210.441	209.841
62740	210.086	209.620
62760	209.731	209.460
62780	209.376	209.179
62800	209.022	208.668
62820	208.710	208.284
62840	208.459	207.985
62860	208.270	207.790
62880	208.143	207.724
62900	208.075	207.690
62920	208.028	207.690
62940	207.980	207.780
62960	207.932	208.495
62980	207.885	208.811
63000	207.837	208.857
63020	207.790	208.257
63040	207.742	207.686
63060	207.695	207.347

HORIZONTAL ALIGNMENT: R=−2000m; 61996.709; L=53.889m; 62055.599; R=2000m; 62084.633; L=159.797m; 62244.430; 62254.470; L=287.393m; 62541.863; R=8000m; 62593.426; L=75.859m; 62669.284; 62680.789; L=137.276m; 62818.065; 62829.284; L=70.109m; 62899.393; R=1200m; 62939.746; 62956.730; R=−1200m; 63028.923; 63045.217

SUPERELEVATION: Q=2.500; Q=2.500

VERTICAL ALIGNMENT: L=250m; 62181.420; L=83.100m G=−0.221; 62264.520; L=220m; 62484.520; L=311.546m G=−1.775; 62796.066; L=100m; 62896.066; L=204.455m G=−0.238

KM 62.0 KM 63.0

FDPR

LEGEND

PROPOSED CENTRELINE
PROPOSED CARRIAGEWAY
PROPOSED SERVICE ROAD
PROPOSED EARTHEN SHOULDER
PROPOSED DRAIN
PROPOSED ROW — PROW — PROW — PROW
EXISTING ROW — EROW — EROW
EXISTING CARRIAGEWAY
ELEVATED HIGHWAY
MAJOR BRIDGE, FLYOVER
MINOR BRIDGE

ROAD OVER BRIDGE
BOX, PIPE CULVERTS
VUP,PUP,LVUP,CUP
VEHICULAR OVER PASS
PROPOSED CHAINAGE IN METRE — 45
BEGINNING & END OF SPIRAL — BS & ES
BEGINNING & END OF CURVE — BC & EC
RADIUS OF CURVE — R=500
PROPOSED BRIDGE
EXISTING BRIDGE
PROPOSED CULVERT
EXISTING CULVERT

TOELINES FOR EMBANKMENT
TOELINES FOR CUT
R RADIUS
Δ INCLUDED ANGLE
Ls TRANSITION/SPIRAL LENGTH
Δs DEVIATION ANGLE OF TRANSITION CURVE
Ts LENGTH OF TANGENT DISTANCE
Δc DEVIATION ANGLE OF CIRCULAR CURVE
Lc LENGTH OF CURVE
Es APEX DISTANCE
e SUPER ELEVATION
V SPEED

PROFILE LEGEND

Finished Road Level
Existing Road Level
TP: Tangent points
CH: Chainage
RL: Reduced Level

Note:
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21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-48A TO 55A	SURYA KIRAN	SHIVAPRASAD	49 OF 88

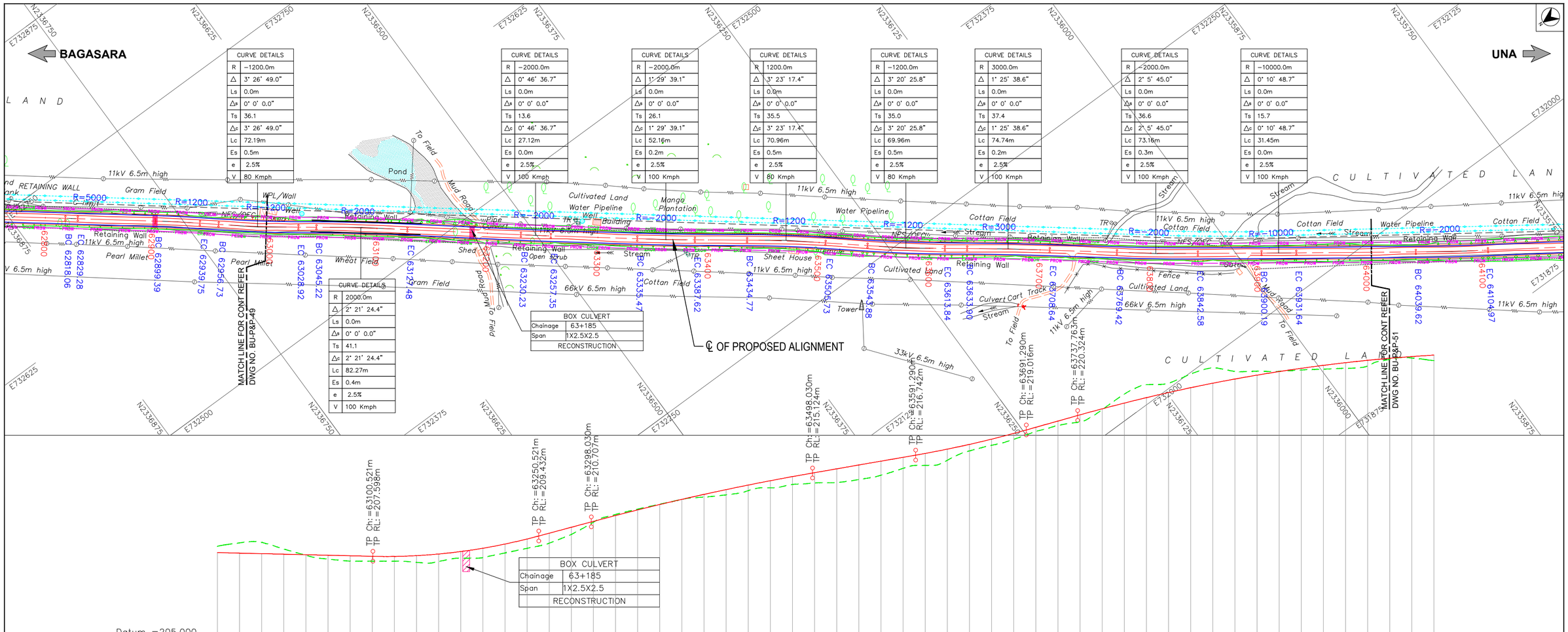
CLIENT
NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT
CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 62/000 KM TO 63/000 KM

Plot Size : (A2 Size)
DRG.NO : BU-P&P-49



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE 45
- BEGINNING & END OF SPIRAL BS & ES
- BEGINNING & END OF CURVE BC & EC
- RADIUS OF CURVE R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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2. All dimensions are in meters.

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Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-48A TO 55A	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 50 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

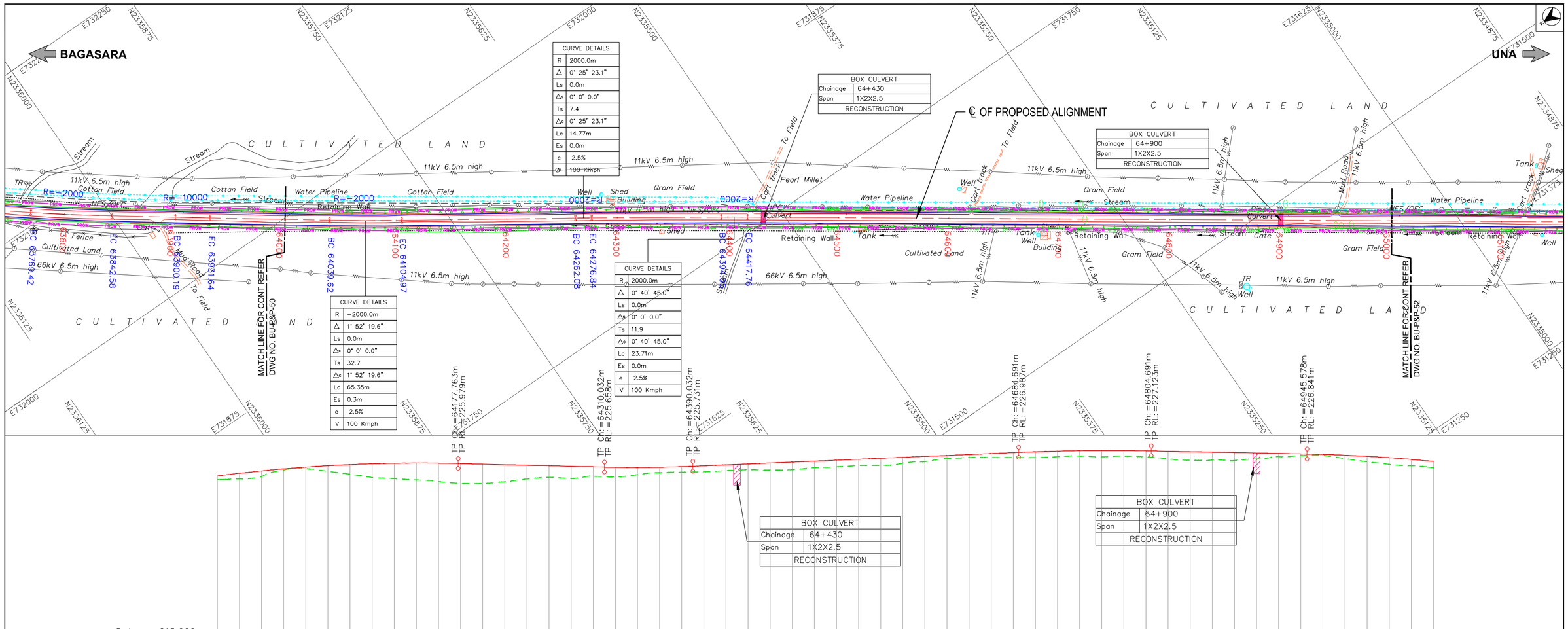
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 63/000 KM TO 64/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-50



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
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- VUP,PUP,LVUP,CUP
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- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
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BU-P&P-48A TO 55A	SURYA KIRAN	SHIVAPRASAD	51 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

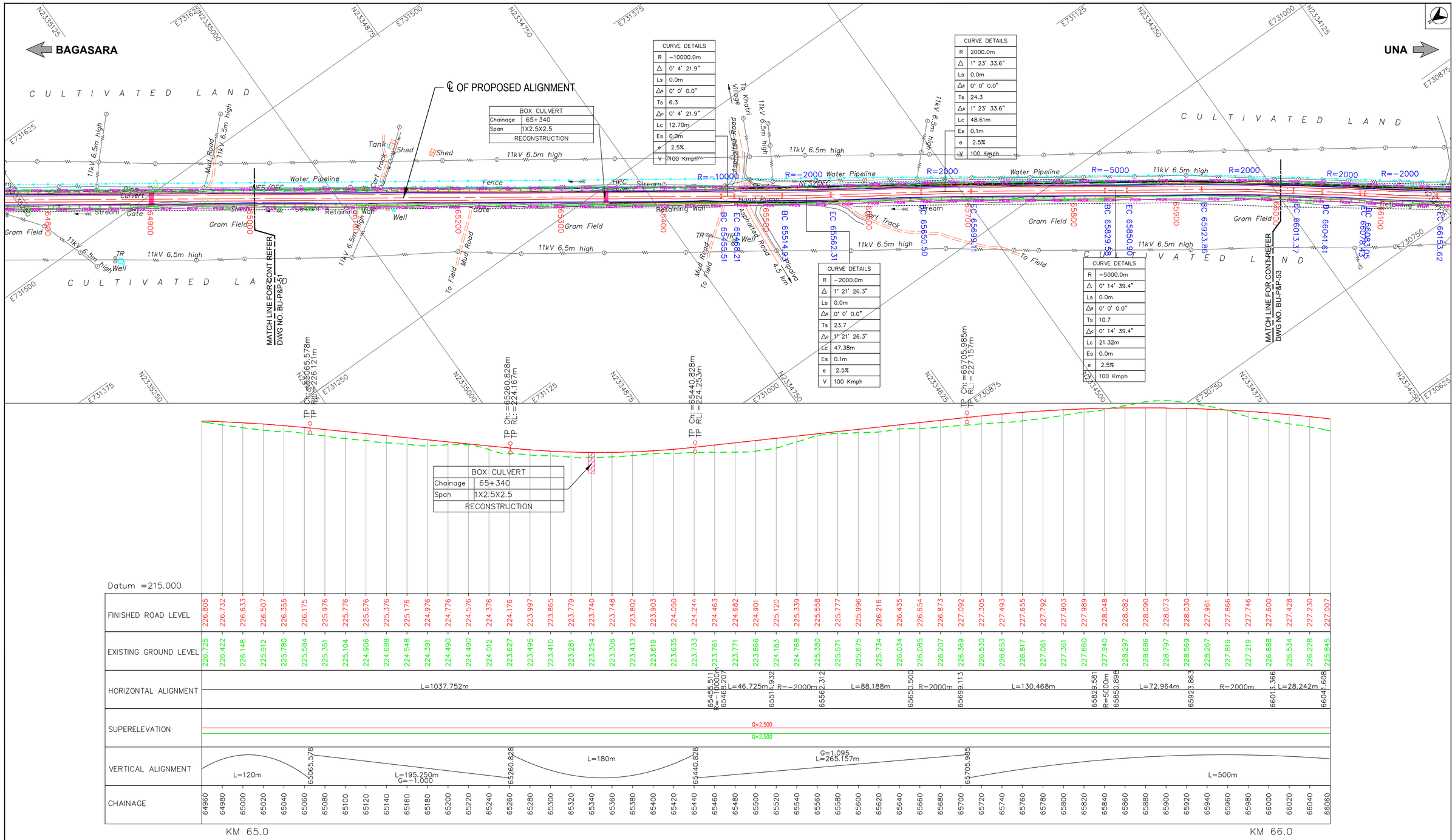
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 64/000 KM TO 65/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-51



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
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- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

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BU-P&P-48A TO 55A	SURYA KIRAN	SHIVAPRASAD	52 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

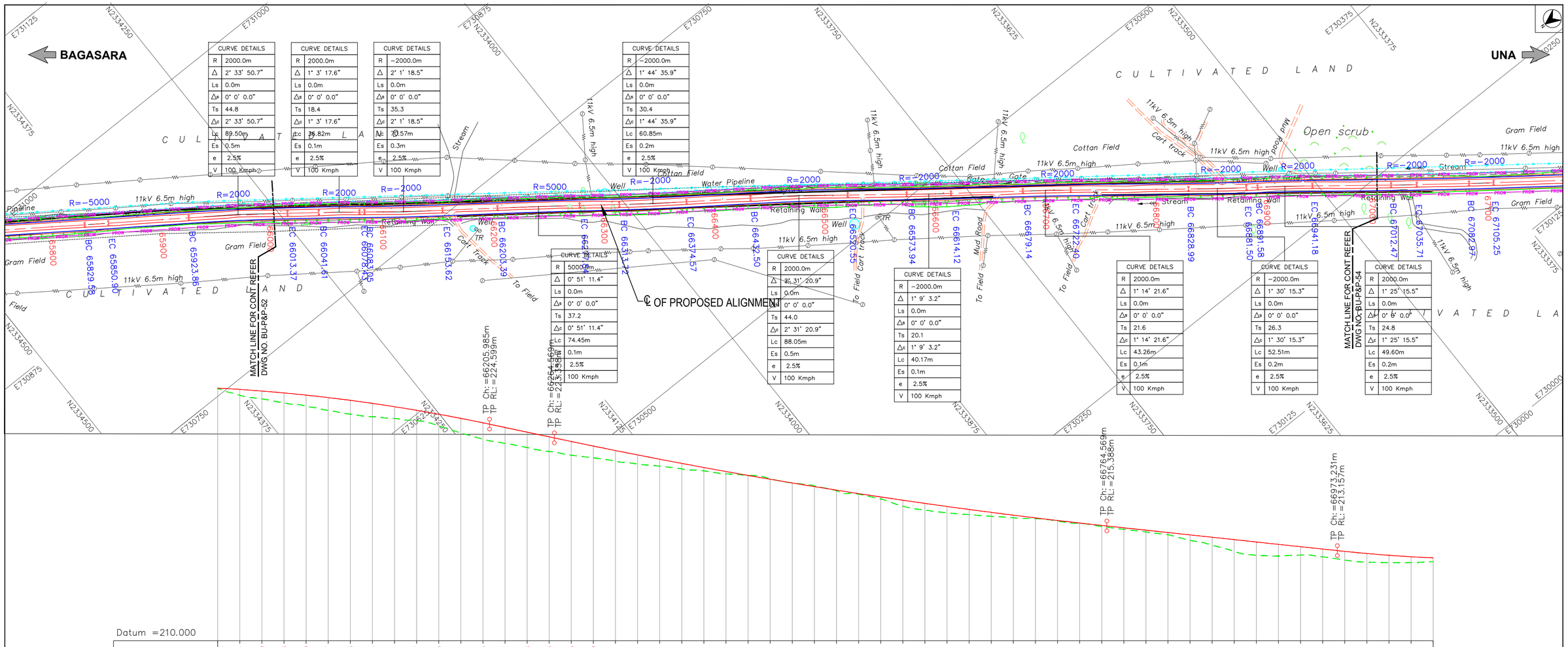
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 65/000 KM TO 66/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-52



CURVE DETAILS	
R	2000.0m
Δ	2° 33' 50.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	44.8
Δc	2° 33' 50.7"
Lc	89.50m
Es	0.5m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 3' 17.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	18.4
Δc	1° 3' 17.6"
Lc	36.82m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	2° 1' 18.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	35.3
Δc	2° 1' 18.5"
Lc	70.57m
Es	0.3m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 44' 35.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	30.4
Δc	1° 44' 35.9"
Lc	60.85m
Es	0.2m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	5000.0m
Δ	0° 51' 11.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	37.2
Δc	0° 51' 11.4"
Lc	74.45m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	2° 31' 20.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	44.0
Δc	2° 31' 20.9"
Lc	88.05m
Es	0.5m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 9' 3.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	20.1
Δc	1° 9' 3.2"
Lc	40.17m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 14' 21.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	21.6
Δc	1° 14' 21.6"
Lc	43.26m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 30' 15.3"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	26.3
Δc	1° 30' 15.3"
Lc	52.51m
Es	0.2m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 25' 15.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	24.8
Δc	1° 25' 15.5"
Lc	49.60m
Es	0.2m
e	2.5%
V	100 Kmph

Datum =210.000

FINISHED ROAD LEVEL	
227.866, 227.746, 227.600, 227.428, 227.230, 227.007, 226.758, 226.484, 226.183, 225.857, 225.505, 225.128, 224.725, 224.302, 223.878, 223.455, 223.033, 222.620, 222.216, 221.819, 221.432, 221.052, 220.681, 220.318, 219.964, 219.618, 219.280, 218.951, 218.631, 218.318, 218.014, 217.719, 217.432, 217.153, 216.883, 216.621, 216.367, 216.122, 215.885, 215.657, 215.437, 215.223, 215.009, 214.795, 214.581, 214.367, 214.153, 213.940, 213.726, 213.512, 213.298, 213.086, 212.896, 212.736, 212.604, 212.501	

EXISTING GROUND LEVEL	
227.819, 227.219, 226.888, 226.534, 226.228, 225.845, 225.507, 225.270, 225.120, 224.929, 224.447, 223.806, 223.247, 222.870, 222.489, 222.129, 221.792, 221.552, 221.251, 220.994, 220.799, 220.556, 220.377, 220.101, 219.979, 219.667, 219.286, 219.014, 218.572, 218.275, 217.829, 217.180, 216.829, 216.583, 216.409, 216.267, 216.129, 216.056, 215.843, 215.620, 215.335, 215.082, 214.844, 214.594, 214.081, 213.650, 213.082, 212.728, 212.670, 212.760, 212.601, 212.309, 212.119, 212.069, 212.065, 212.170	

HORIZONTAL ALIGNMENT	
R=2000m	66013.366
L=28.242m	66041.608
R=2000m	66078.431
	66083.046
R=−2000m	66153.620
L=49.767m	66203.387
R=5000m	66277.839
L=35.881m	66313.720
R=−2000m	66374.573
L=57.927m	66432.501
R=2000m	66520.552
L=53.390m	66573.942
R=−2000m	66614.116
L=65.019m	66679.135
R=2000m	66722.396
L=106.598m	66828.994
R=−2000m	66881.502
	66891.578
R=2000m	66941.179
L=71.286m	67012.465
	67035.713

SUPERELEVATION: Q=2.500; Q=2.500

VERTICAL ALIGNMENT	
L=500m	66205.985
L=58.584m G=−2.119	66264.569
L=500m	66764.569
L=208.662m G=−1.069	66973.231
L=120m	

CHAINAGE	
65960, 65980, 66000, 66020, 66040, 66060, 66080, 66100, 66120, 66140, 66160, 66180, 66200, 66220, 66240, 66260, 66280, 66300, 66320, 66340, 66360, 66380, 66400, 66420, 66440, 66460, 66480, 66500, 66520, 66540, 66560, 66580, 66600, 66620, 66640, 66660, 66680, 66700, 66720, 66740, 66760, 66780, 66800, 66820, 66840, 66860, 66880, 66900, 66920, 66940, 66960, 66980, 67000, 67020, 67040, 67060	

KM 66.0 — KM 67.0

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-48A TO 55A	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 53 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

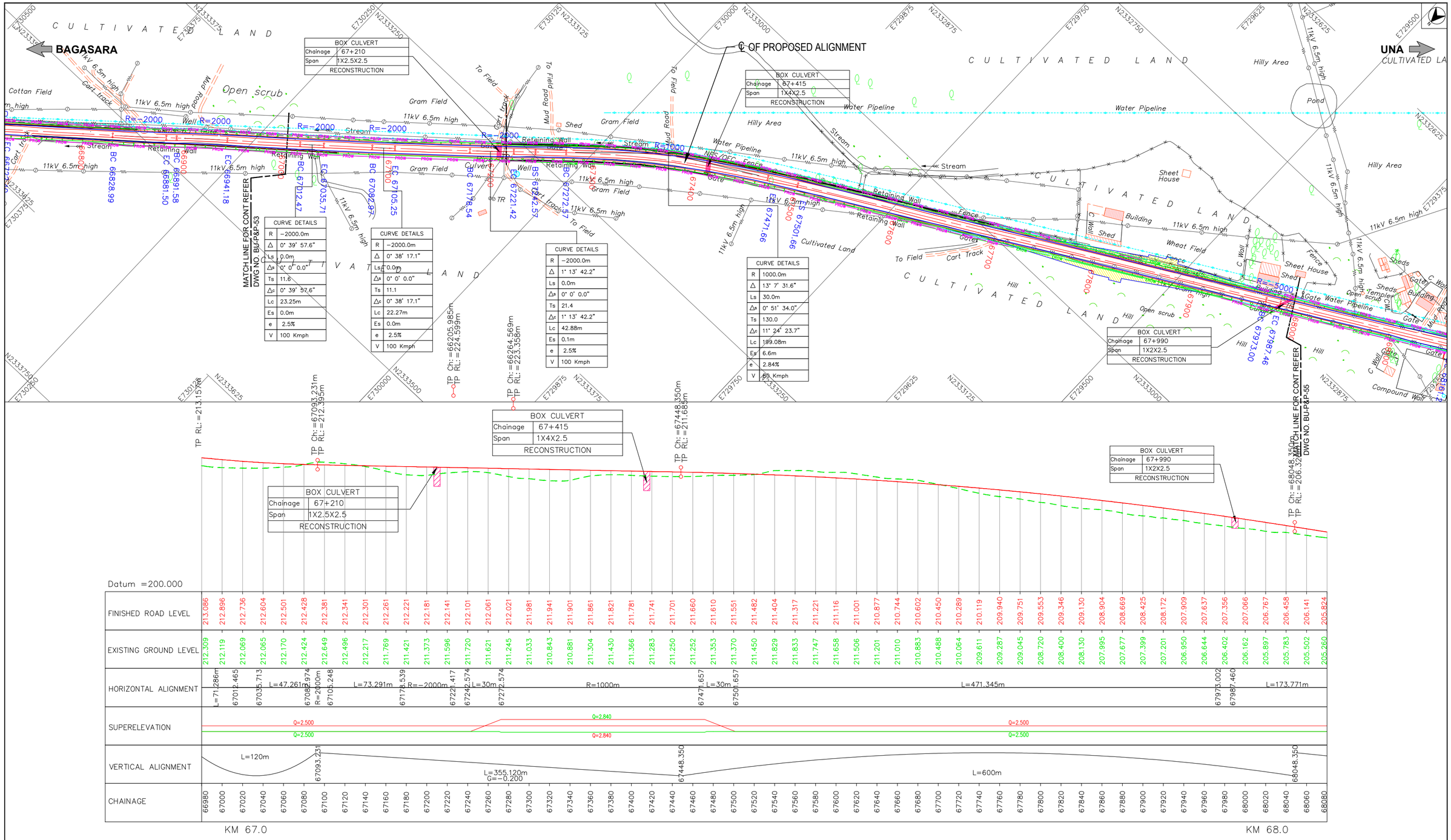
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 66/000 KM TO 67/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-53



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
1	10.12.24	Incorporating the suggestions Based on the meetings held with RO Gandhinagar & EE Rajkot on 25.09.24 & 24.10.24	JTP	SM	SNV
0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-48A TO 55A	SURYA KIRAN	SHIVAPRASAD	54 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

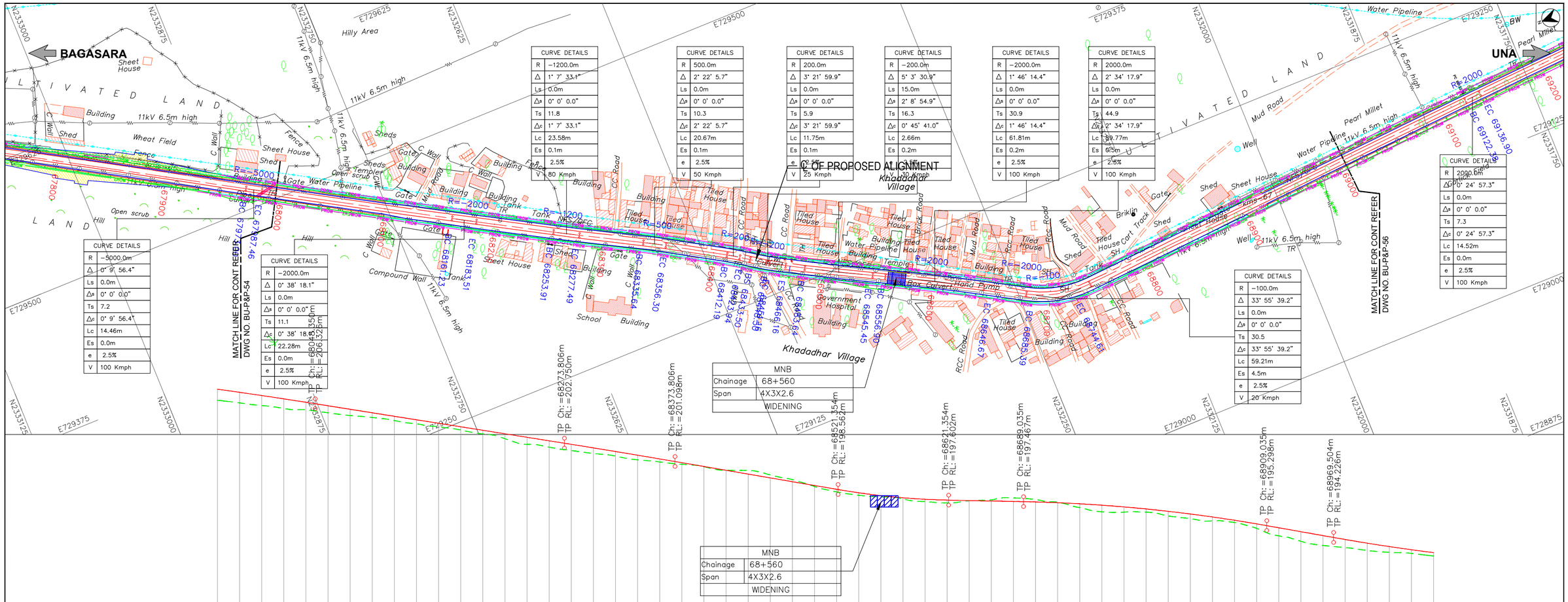
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 67/000 KM TO 68/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-54



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-48A TO 55A	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 55 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

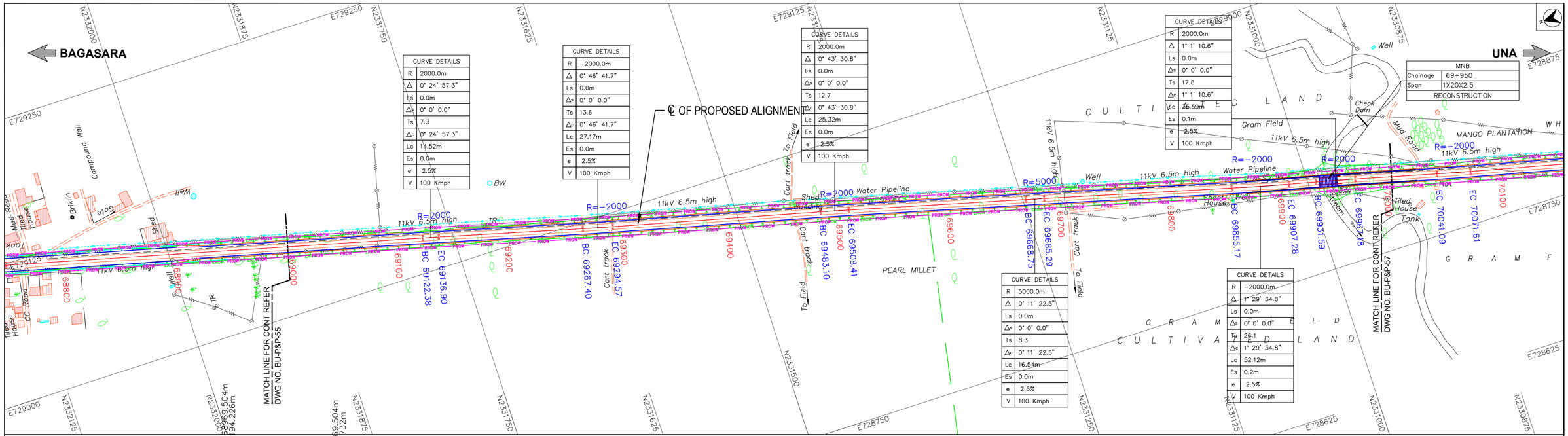
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 68/000 KM TO 69/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-55



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
TBU-P&P-56 TO 61	SURYA KIRAN	SHIVAPRASAD	56 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

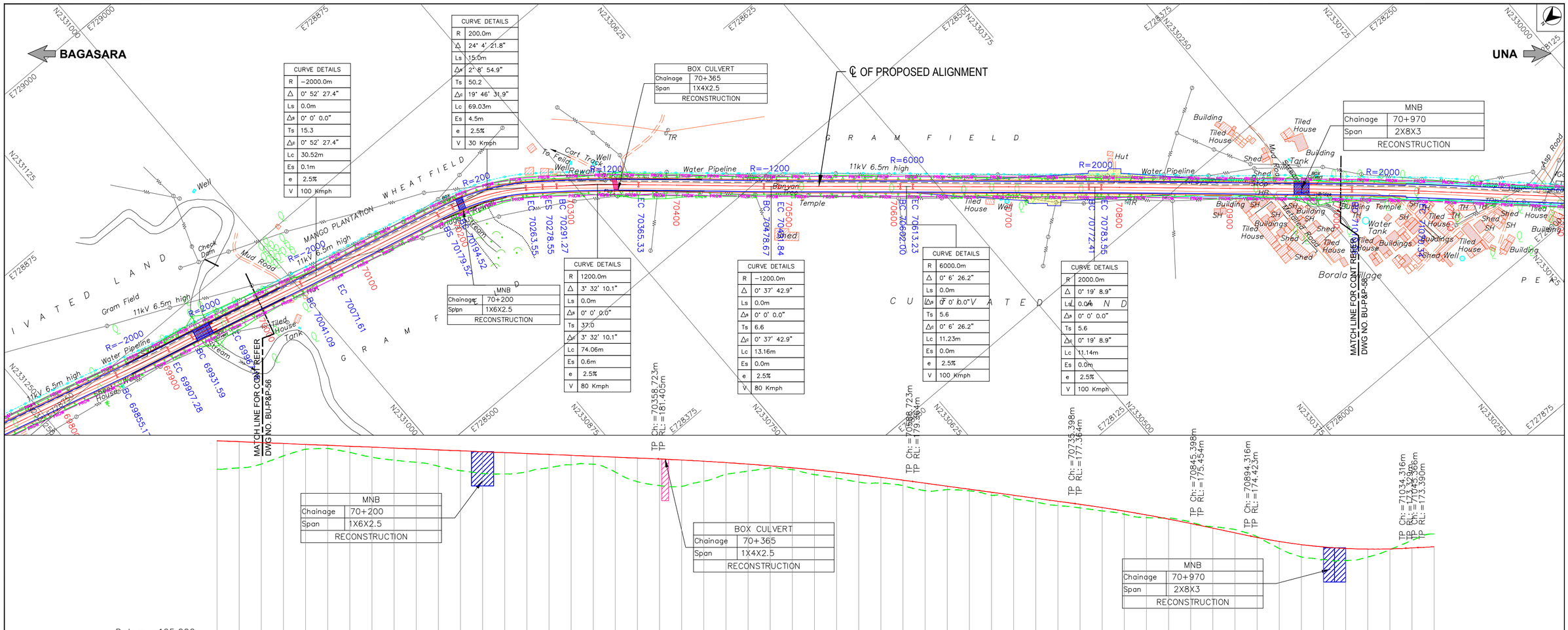
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 69/000 KM TO 70/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-56



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R RADIUS
Δ INCLUDED ANGLE
Ls TRANSITION/SPIRAL LENGTH
Δs DEVIATION ANGLE OF TRANSITION CURVE
Ts LENGTH OF TANGENT DISTANCE
Δc DEVIATION ANGLE OF CIRCULAR CURVE
Lc LENGTH OF CURVE
Es APEX DISTANCE
e SUPER ELEVATION
V SPEED

PROFILE LEGEND
- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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2. All dimensions are in meters.

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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
TBU-P&P-56 TO 61	SURYA KIRAN	SHIVAPRASAD	57 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT

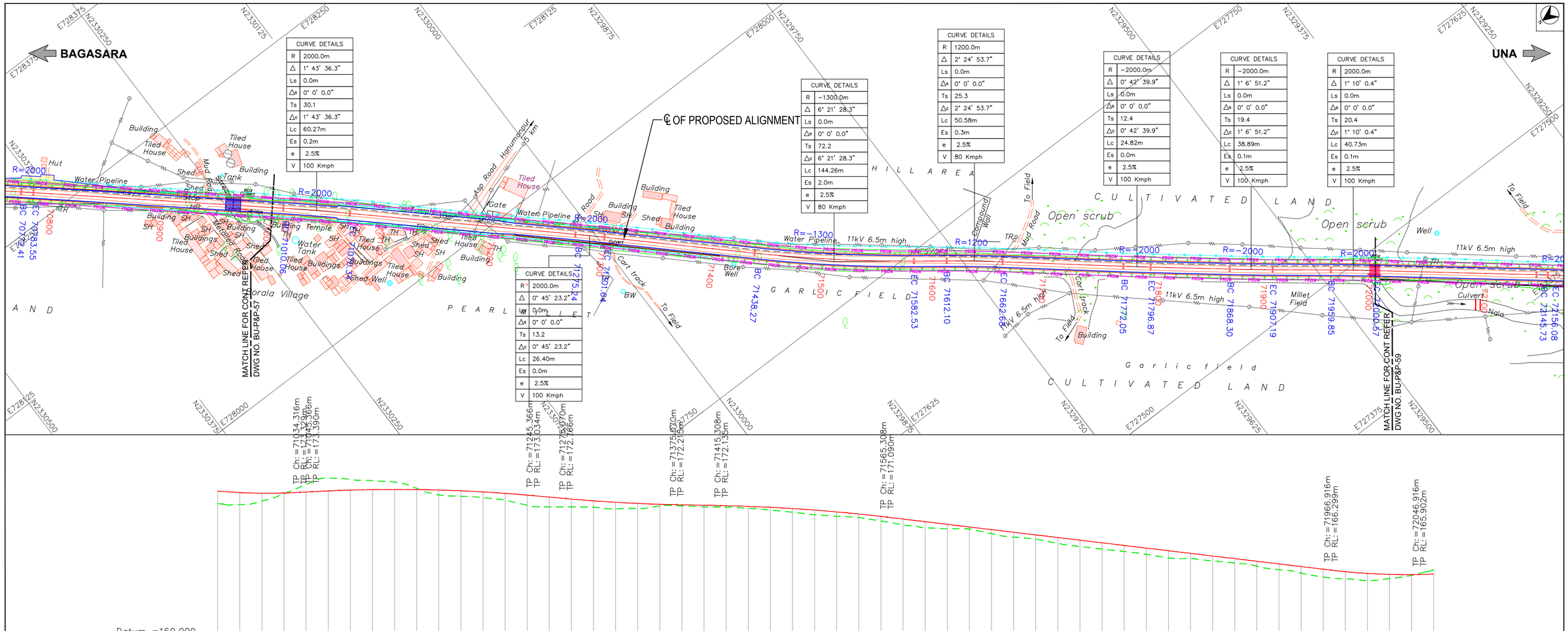
CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 70/000 KM TO 71/000 KM

Plot Size : (A2 Size)

DRG.NO : BU–P&P–57



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
TBU-P&P-56 TO 61	SURYA KIRAN	SHIVAPRASAD	58 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

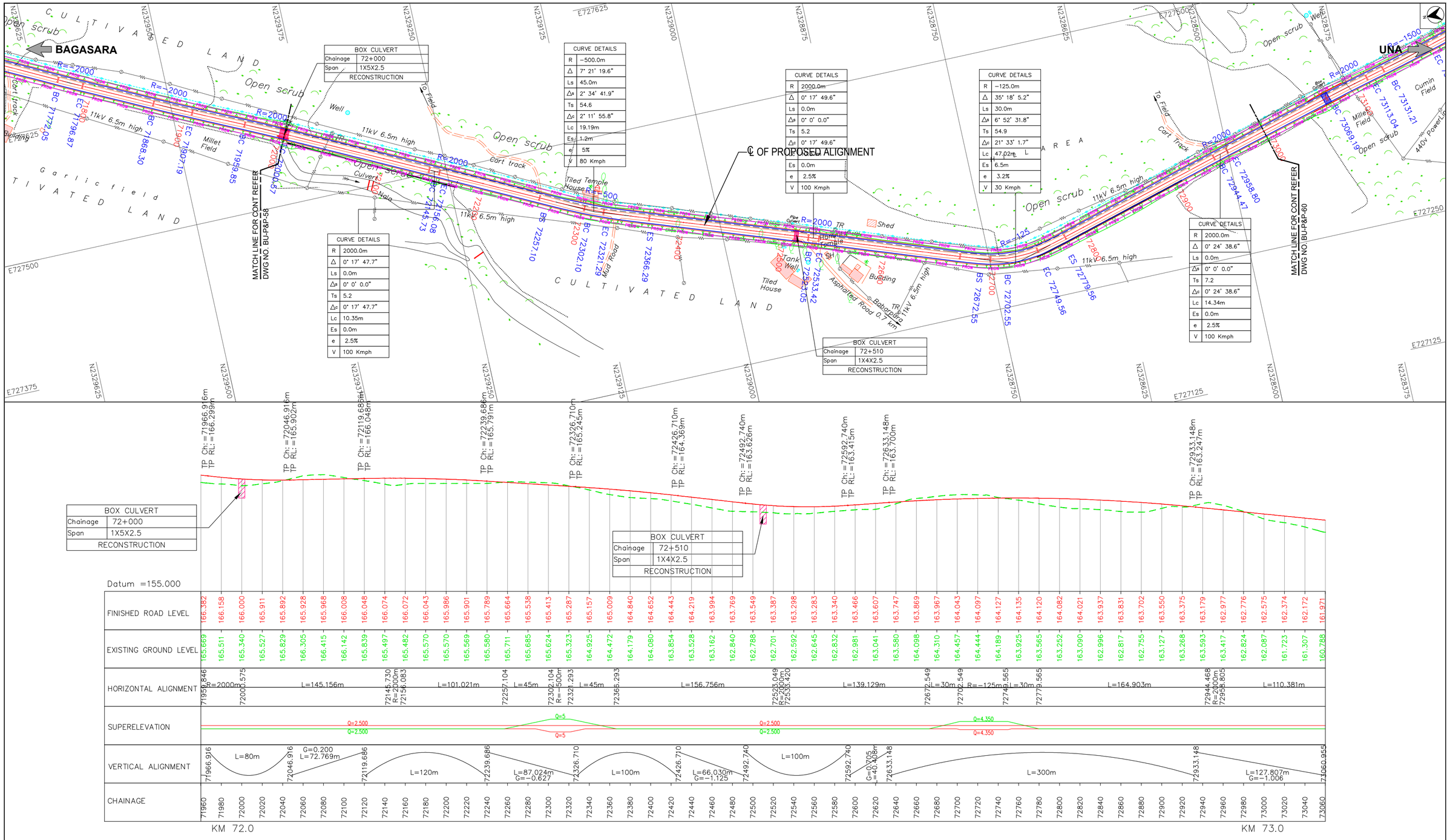
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 71/000 KM TO 72/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-58



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
1	10.12.24	Incorporating the suggestions Based on the meetings held with RO Gandhinagar & EE Rajkot on 25.09.24 & 24.10.24	JTP	SM	SNV
0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
TBU-P&P-56 TO 61	SURYA KIRAN	SHIVAPRASAD	59 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT

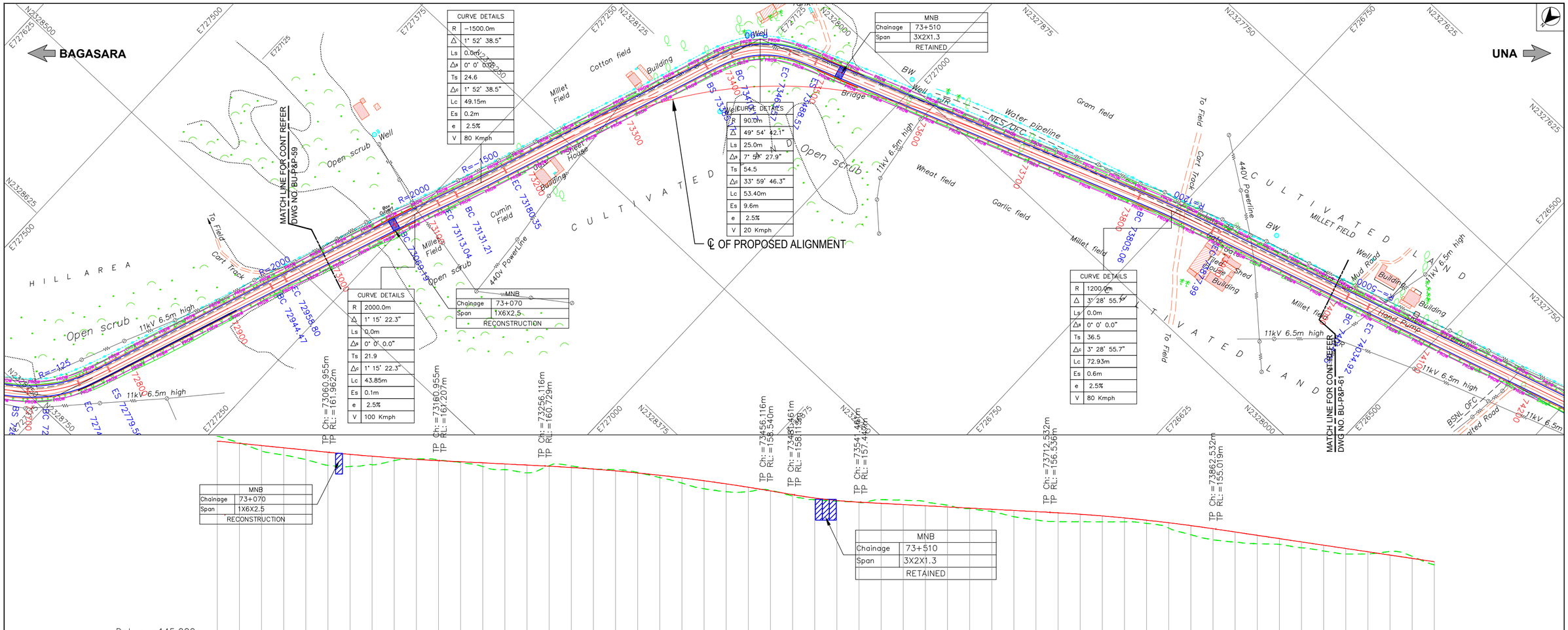
CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 72/000 KM TO 73/000 KM

Plot Size : (A2 Size)

DRG.NO : BU-P&P-59



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
TBU-P&P-56 TO 61	SURYA KIRAN	SHIVAPRASAD	60 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

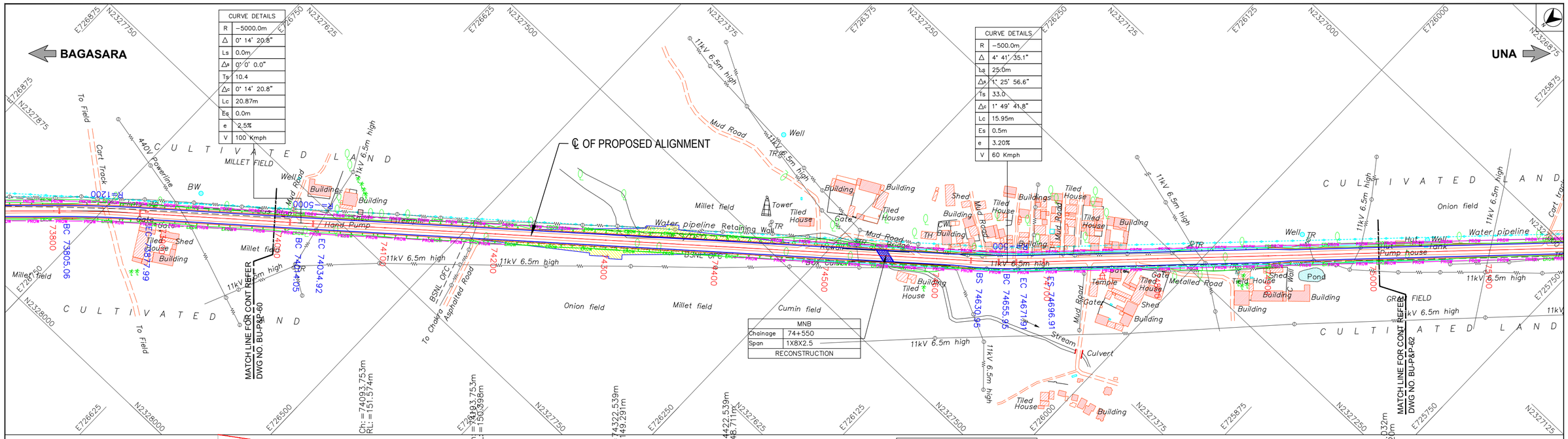
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 73/000 KM TO 74/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−60



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name TBU-P&P-56 TO 61	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 61 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

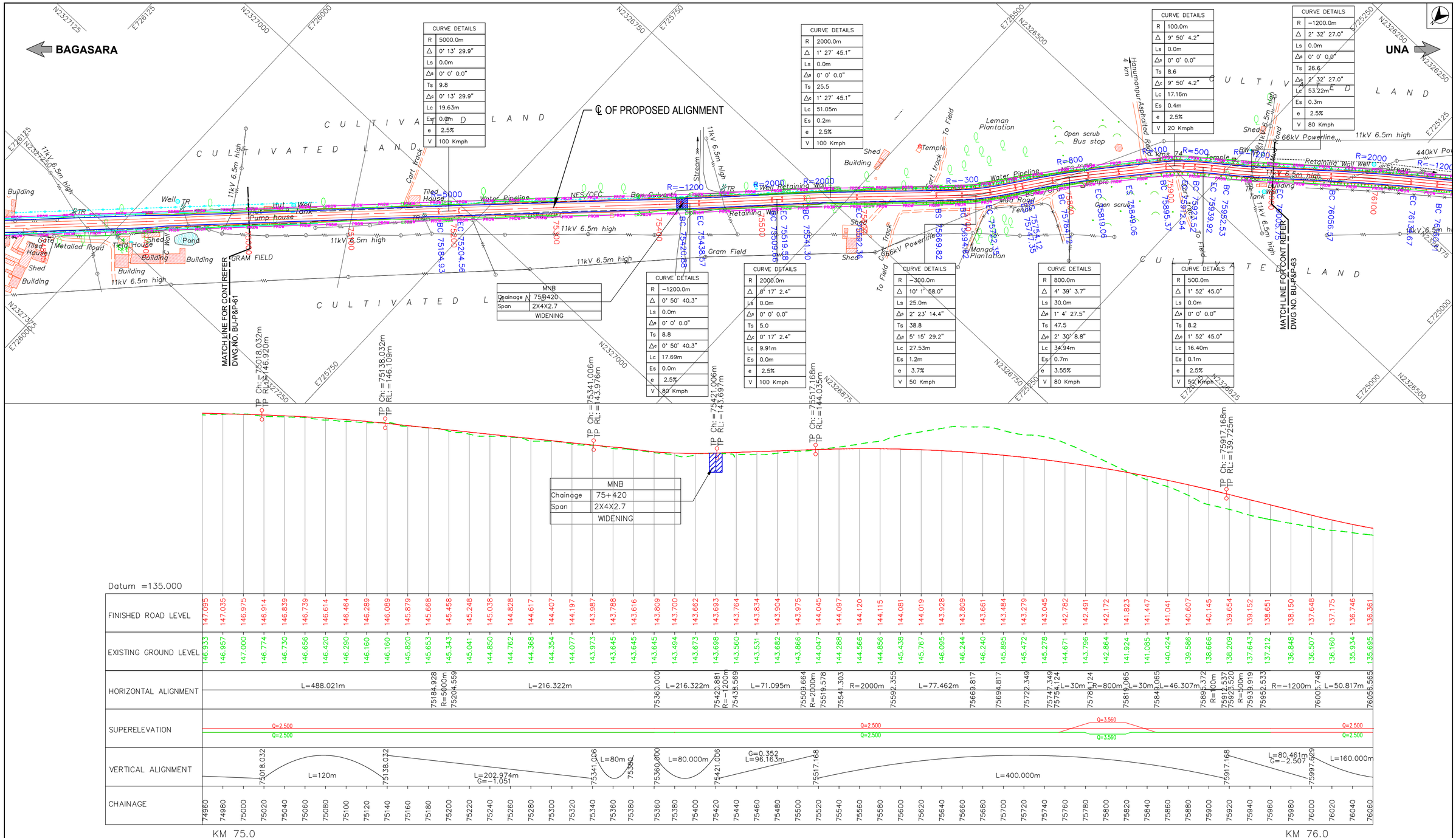
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 74/000 KM TO 75/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−61



CURVE DETAILS	
R	5000.0m
Δ	0° 13' 29.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	9.8
Δc	0° 13' 29.9"
Lc	19.63m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 27' 45.1"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	25.5
Δc	1° 27' 45.1"
Lc	51.05m
Es	0.2m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	100.0m
Δ	9° 50' 4.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	8.6
Δc	9° 50' 4.2"
Lc	17.16m
Es	0.4m
e	2.5%
V	20 Kmph

CURVE DETAILS	
R	−1200.0m
Δ	2° 32' 27.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	26.6
Δc	2° 32' 27.0"
Lc	53.22m
Es	0.3m
e	2.5%
V	80 Kmph

MNB	
Chainage	75+420
Span	2X4X2.7
	WIDENING

CURVE DETAILS	
R	−1200.0m
Δ	0° 50' 40.3"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	8.8
Δc	0° 50' 40.3"
Lc	17.69m
Es	0.0m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	2000.0m
Δ	0° 17' 2.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.0
Δc	0° 17' 2.4"
Lc	9.91m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−300.0m
Δ	10° 1' 58.0"
Ls	25.0m
Δs	2° 23' 14.4"
Ts	38.8
Δc	5° 15' 29.2"
Lc	27.53m
Es	1.2m
e	3.7%
V	50 Kmph

CURVE DETAILS	
R	800.0m
Δ	4° 39' 3.7"
Ls	30.0m
Δs	1° 4' 27.5"
Ts	47.5
Δc	2° 30' 8.8"
Lc	34.94m
Es	0.7m
e	3.55%
V	80 Kmph

CURVE DETAILS	
R	500.0m
Δ	1° 52' 45.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	8.2
Δc	1° 52' 45.0"
Lc	16.40m
Es	0.1m
e	2.5%
V	50 Kmph

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
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- EXISTING BRIDGE
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- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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2. All dimensions are in meters.

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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-62 TO 67	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 62 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

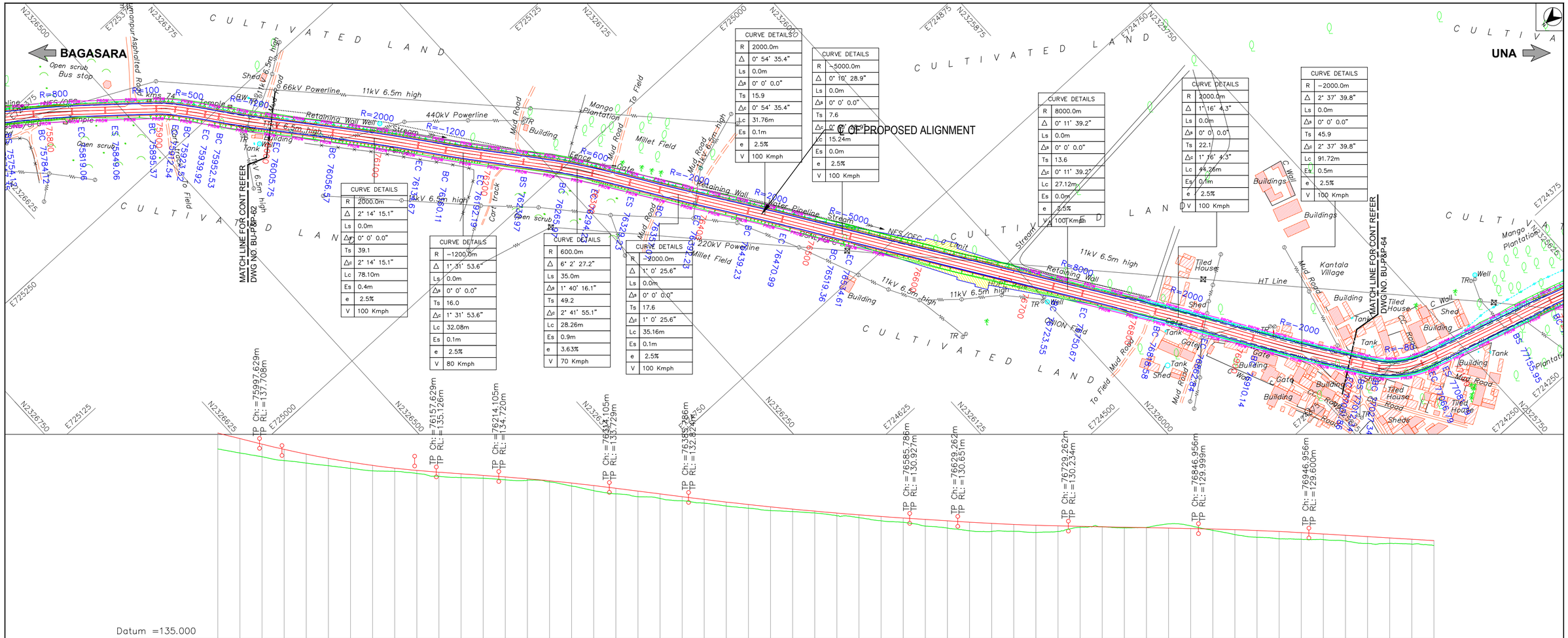
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 75/000 KM TO 76/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-62



CURVE DETAILS	
R	2000.0m
Δ	2° 14' 15.1"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	39.1
Δc	2° 14' 15.1"
Lc	78.10m
Es	0.4m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−1200.0m
Δ	1° 31' 53.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	16.0
Δc	1° 31' 53.6"
Lc	32.08m
Es	0.1m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	600.0m
Δ	6° 2' 27.2"
Ls	35.0m
Δs	1° 40' 16.1"
Ts	49.2
Δc	2° 41' 55.1"
Lc	28.26m
Es	0.9m
e	3.63%
V	70 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 0' 25.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	17.6
Δc	1° 0' 25.6"
Lc	35.16m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	0° 54' 35.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	15.9
Δc	0° 54' 35.4"
Lc	31.76m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−5000.0m
Δ	0° 10' 28.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	7.6
Δc	0° 10' 28.9"
Lc	15.24m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	8000.0m
Δ	0° 11' 39.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	13.6
Δc	0° 11' 39.2"
Lc	27.12m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 16' 4.3"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	22.1
Δc	1° 16' 4.3"
Lc	44.26m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	2° 37' 39.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	45.9
Δc	2° 37' 39.8"
Lc	91.72m
Es	0.5m
e	2.5%
V	100 Kmph

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

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BU-P&P-62 TO 67	SURYA KIRAN	SHIVAPRASAD	63 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

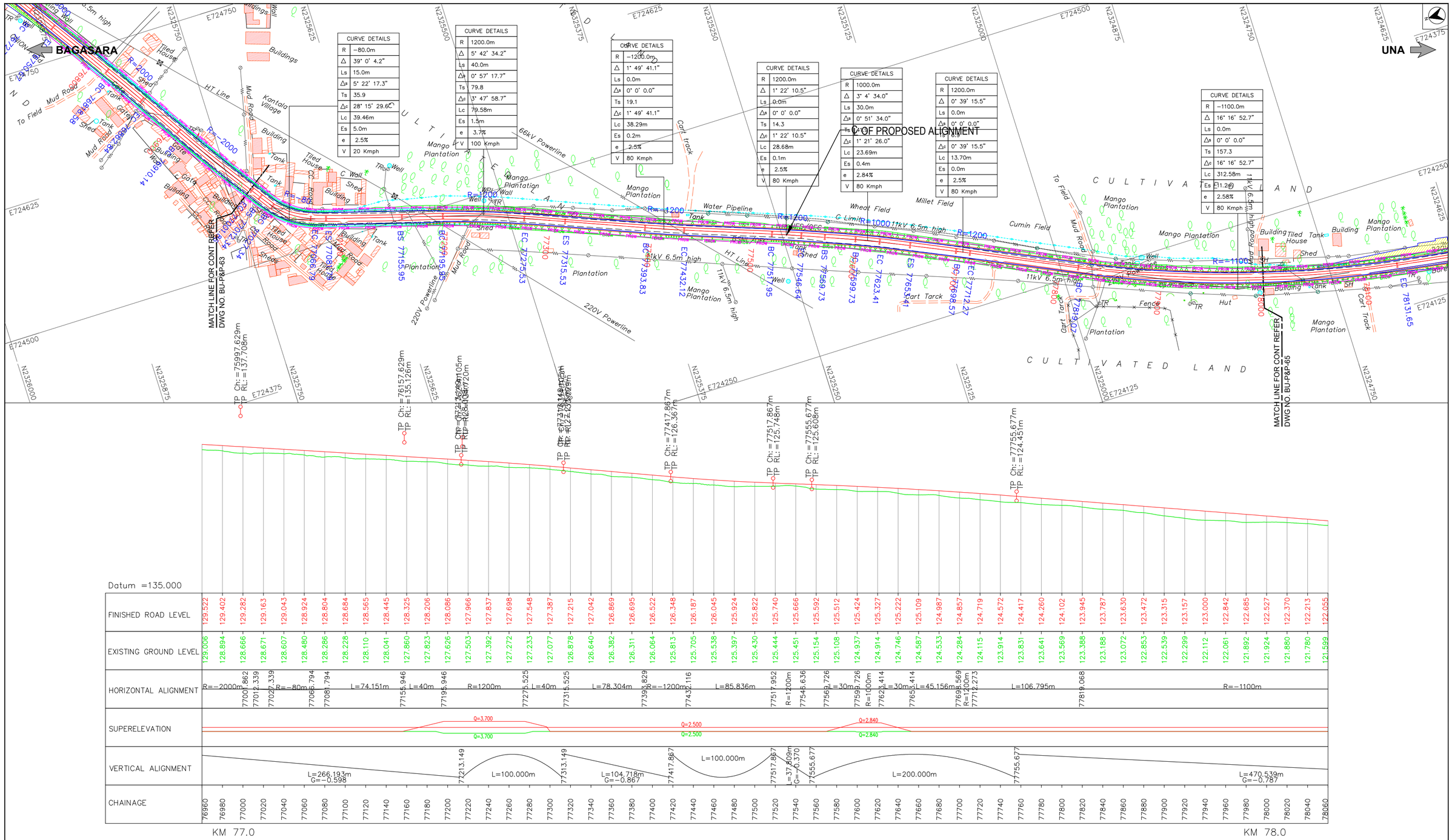
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 76/000 KM TO 77/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-63



CURVE DETAILS	
R	−80.0m
Δ	39° 0' 4.2"
Ls	15.0m
Δs	5° 22' 17.3"
Ts	35.9
Δc	28° 15' 29.6"
Lc	39.46m
Es	5.0m
e	2.5%
V	20 Kmph

CURVE DETAILS	
R	1200.0m
Δ	5° 42' 34.2"
Ls	40.0m
Δs	0° 57' 17.7"
Ts	79.8
Δc	3° 47' 58.7"
Lc	79.58m
Es	1.5m
e	3.7%
V	100 Kmph

CURVE DETAILS	
R	−1200.0m
Δ	1° 49' 41.1"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	19.1
Δc	1° 49' 41.1"
Lc	38.29m
Es	0.2m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	1200.0m
Δ	1° 22' 10.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	14.3
Δc	1° 22' 10.5"
Lc	28.68m
Es	0.1m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	1000.0m
Δ	3° 4' 34.0"
Ls	30.0m
Δs	0° 51' 34.0"
Ts	30.1
Δc	1° 21' 26.0"
Lc	23.69m
Es	0.4m
e	2.84%
V	80 Kmph

CURVE DETAILS	
R	1200.0m
Δ	0° 39' 15.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	13.7
Δc	0° 39' 15.5"
Lc	13.70m
Es	0.0m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	−1100.0m
Δ	16° 16' 52.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	157.3
Δc	16° 16' 52.7"
Lc	312.58m
Es	11.26m
e	2.58%
V	80 Kmph

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-62 TO 67	SURYA KIRAN	SHIVAPRASAD	64 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

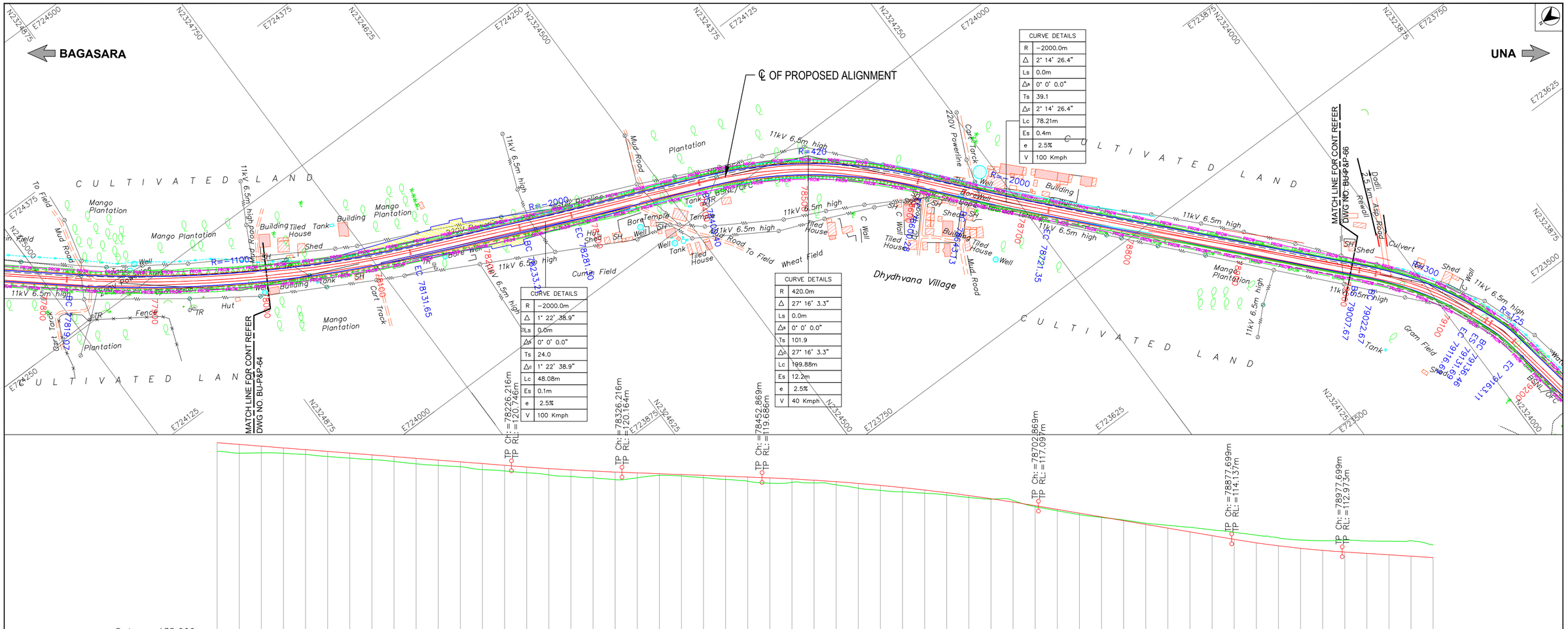
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 77/000 KM TO 78/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−64



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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Note:
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Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-62 TO 67	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 65 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

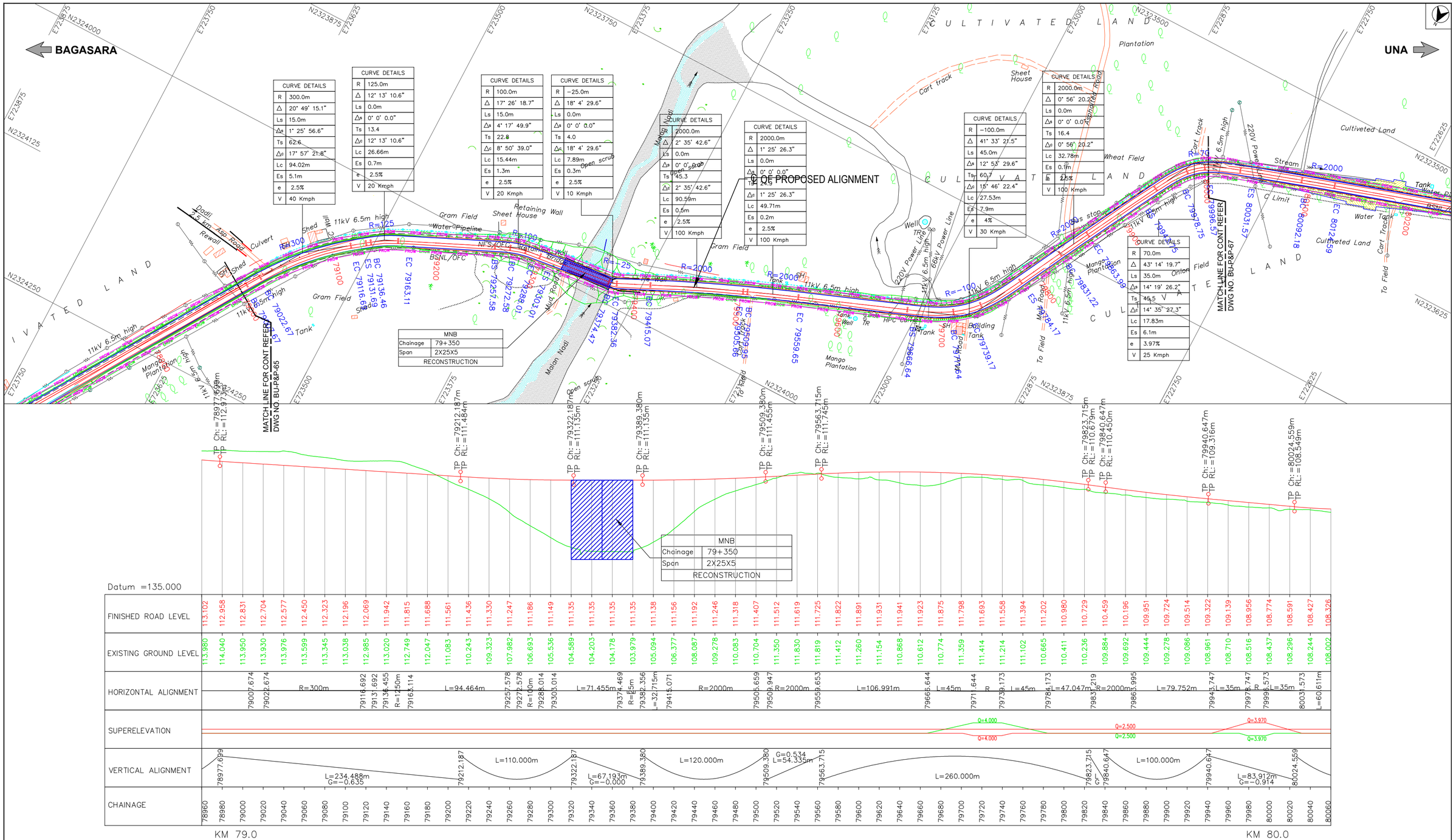
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 78/000 KM TO 79/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−65



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
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- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
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- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
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- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
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Note:
1. Depiction of the structures in drawings is indicative only.
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21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-62 TO 67	SURYA KIRAN	SHIVAPRASAD	66 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

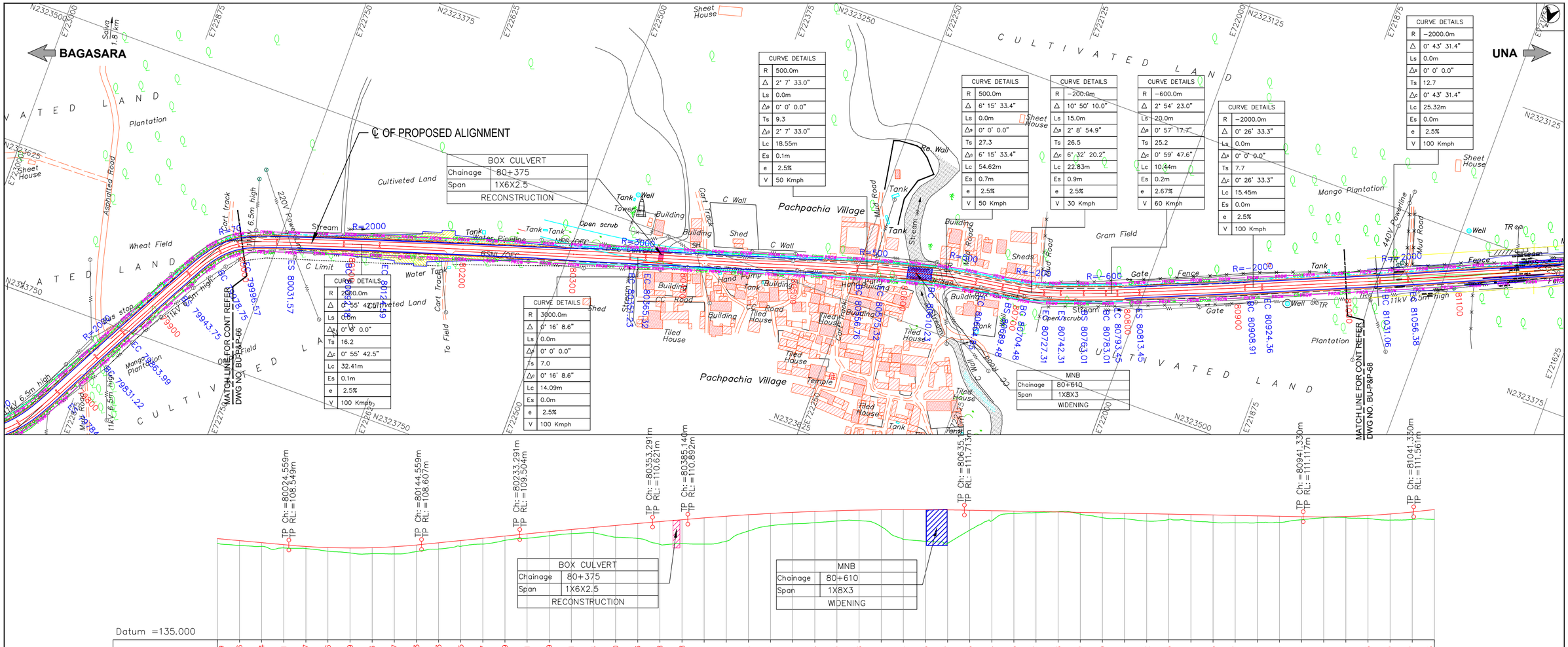
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 79/000 KM TO 80/000 KM

Plot Size : (A2 Size) DRG.NO : BU-P&P-66



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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- RL: Reduced Level

Note:
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File name	Designed by	Approved by	Sheets
BU-P&P-62 TO 67	SURYA KIRAN	SHIVAPRASAD	67 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

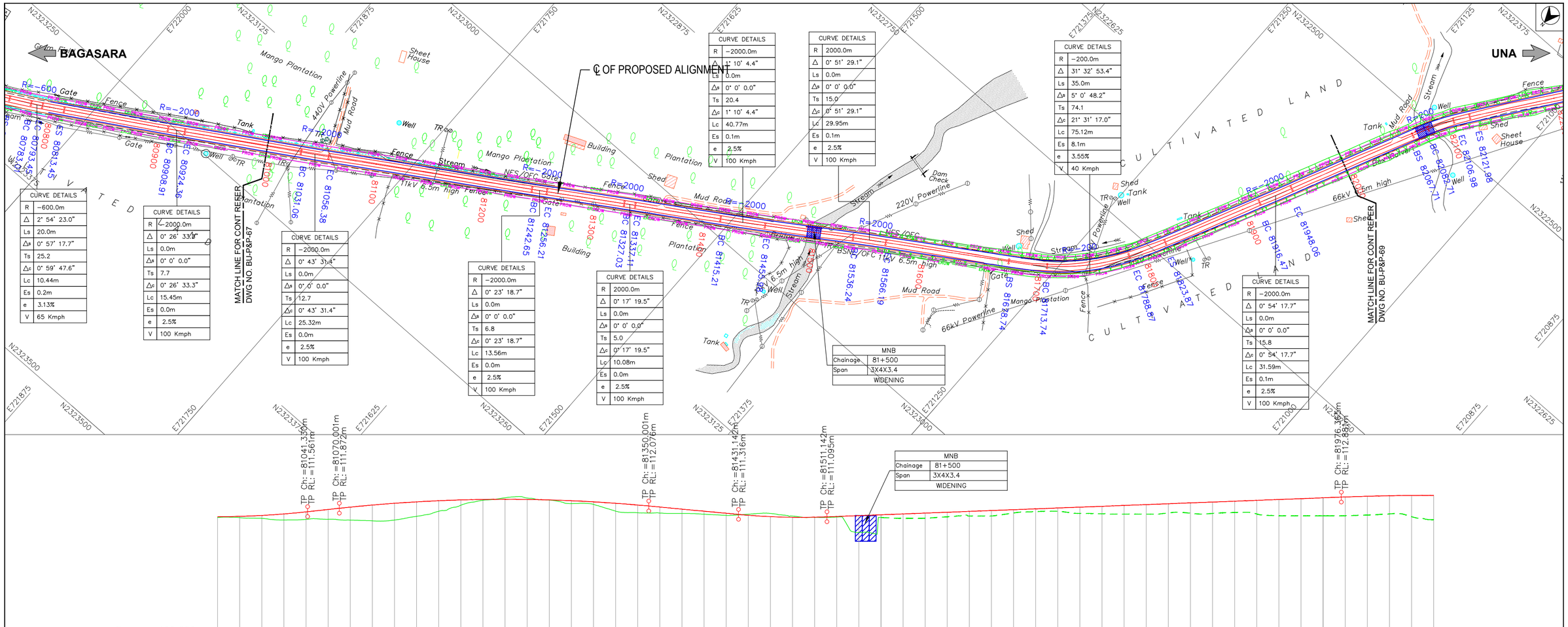
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 80/000 KM TO 81/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-67



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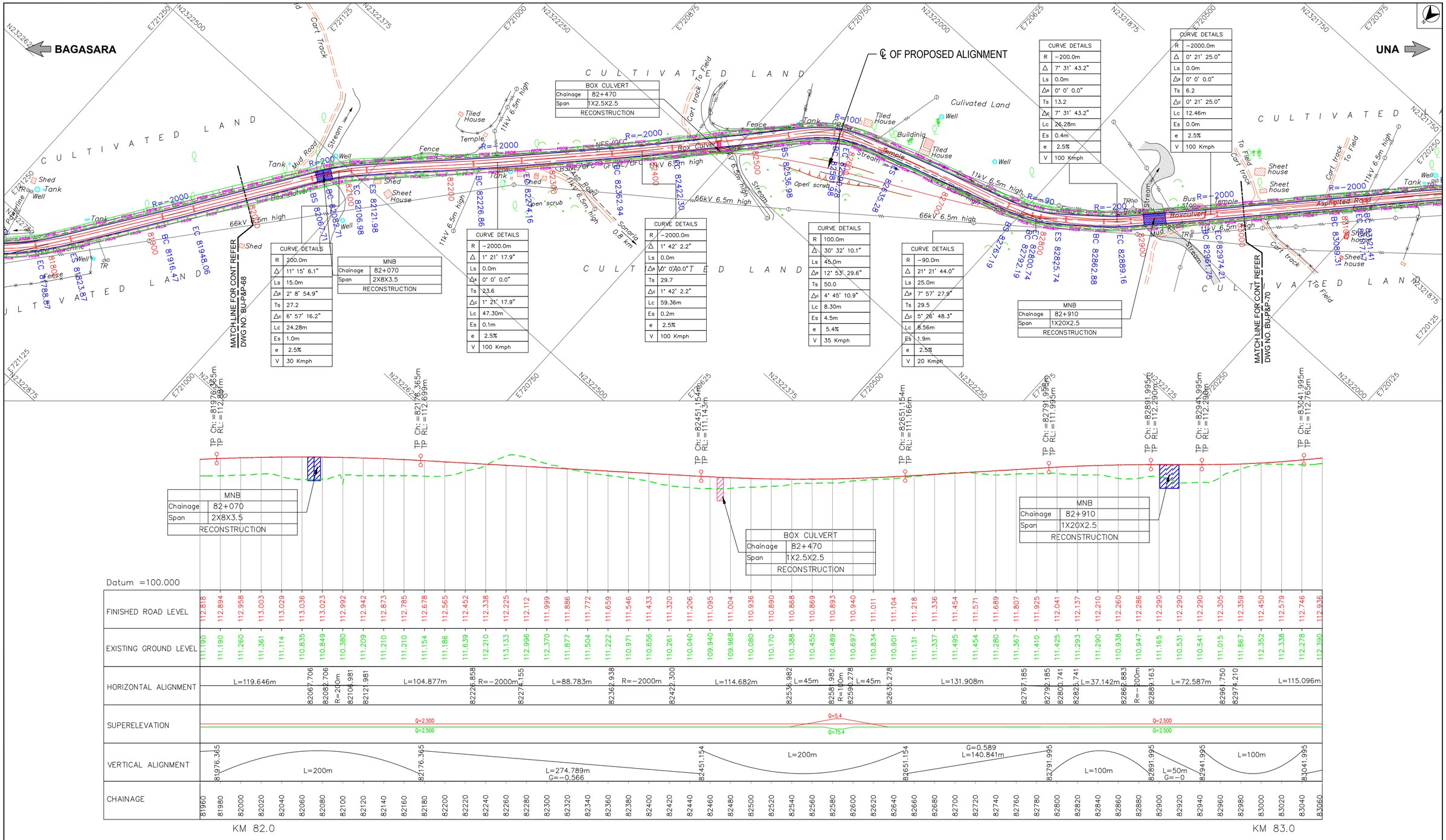


BOX CULVERT	
Chainage	82+470
Span	1X2.5X2.5
RECONSTRUCTION	

MNB	
Chainage	82+070
Span	2X8X3.5
RECONSTRUCTION	

CURVE DETAILS	
R	200.0m
Δ	11° 15' 6.1"
Ls	15.0m
Δs	2° 8' 54.9"
Ts	27.2
Δc	6° 57' 16.2"
Lc	24.28m
Es	1.0m
e	2.5%
V	30 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 21' 17.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	23.6
Δc	1° 21' 17.9"
Lc	47.30m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	1° 42' 2.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	29.7
Δc	1° 42' 2.2"
Lc	59.36m
Es	0.2m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	100.0m
Δ	30° 32' 10.1"
Ls	45.0m
Δs	12° 53' 29.6"
Ts	50.0
Δc	4° 45' 10.9"
Lc	8.30m
Es	4.5m
e	5.4%
V	35 Kmph

CURVE DETAILS	
R	−90.0m
Δ	21° 21' 44.0"
Ls	25.0m
Δs	7° 57' 27.9"
Ts	29.5
Δc	5° 26' 48.3"
Lc	8.56m
Es	1.9m
e	2.5%
V	20 Kmph

CURVE DETAILS	
R	−200.0m
Δ	7° 31' 43.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	13.2
Δc	7° 31' 43.2"
Lc	26.28m
Es	0.4m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	0° 21' 25.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	6.2
Δc	0° 21' 25.0"
Lc	12.46m
Es	0.0m
e	2.5%
V	100 Kmph

MNB	
Chainage	82+910
Span	1X20X2.5
RECONSTRUCTION	

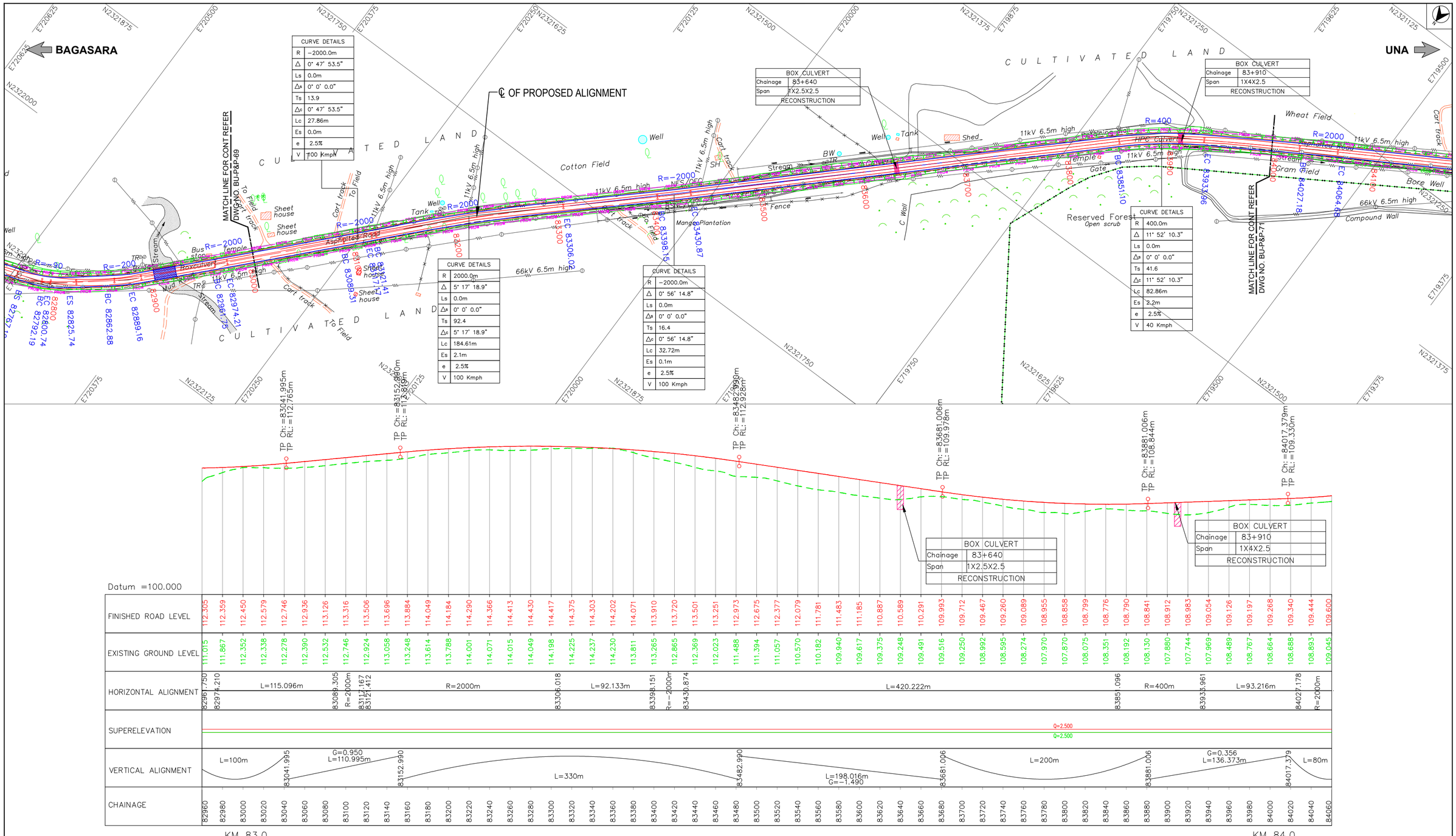
BOX CULVERT	
Chainage	82+470
Span	1X2.5X2.5
RECONSTRUCTION	

MNB	
Chainage	82+070
Span	2X8X3.5
RECONSTRUCTION	

MNB	
Chainage	82+910
Span	1X20X2.5
RECONSTRUCTION	

TP Ch: =81976.365m TP RL: =112.699m
TP Ch: =82176.365m TP RL: =112.699m
TP Ch: =82451.154m TP RL: =111.143m
TP Ch: =82651.154m TP RL: =111.166m
TP Ch: =82791.995m TP RL: =111.995m
TP Ch: =82891.995m TP RL: =112.290m
TP Ch: =82941.995m TP RL: =112.290m
TP Ch: =83041.995m TP RL: =112.765m

| FINISHED ROAD LEVEL | | |



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
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- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
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- CH: Chainage
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Note:
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-68 TO 73	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 70 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

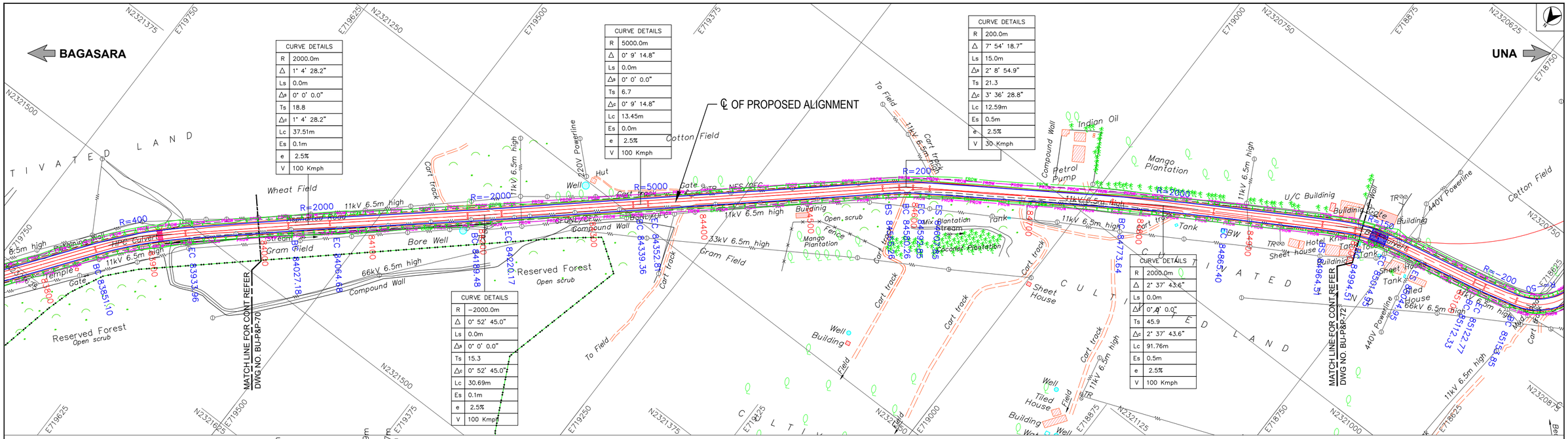
PROJECT

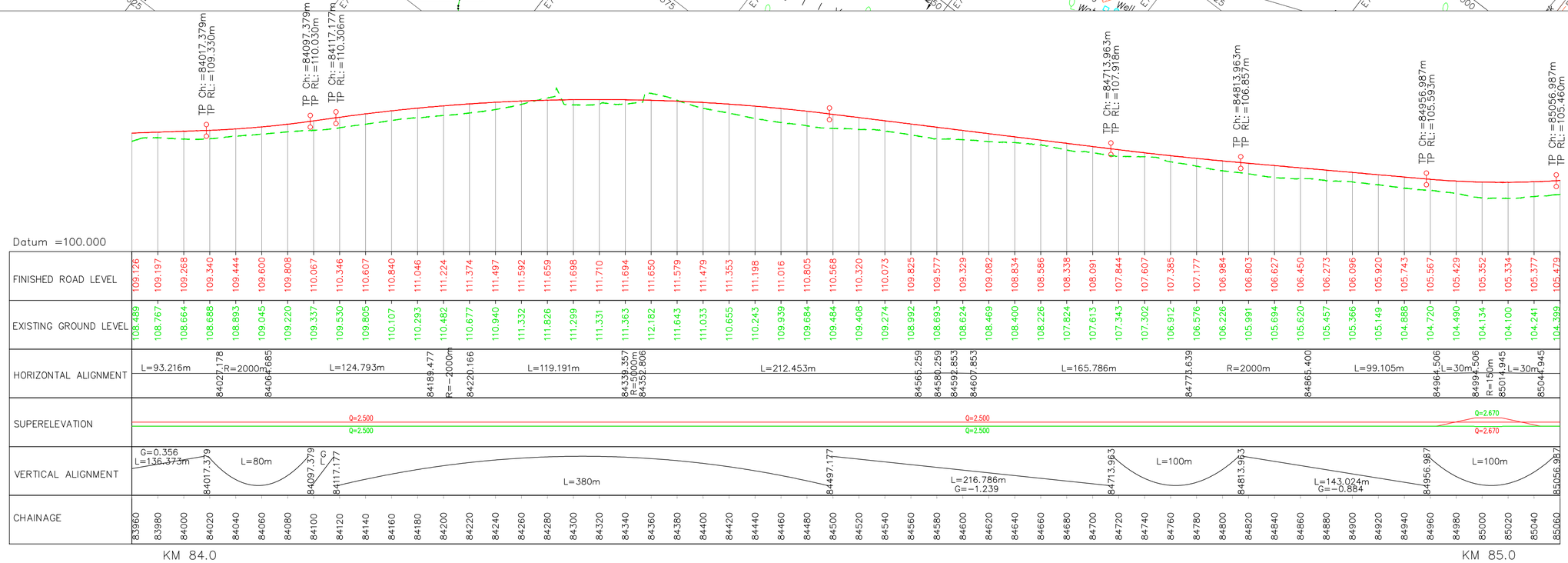
CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 83/000 KM TO 84/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-70





FDPR

LEGEND

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- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
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- EXISTING CULVERT
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- TOELINES FOR CUT

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Δs DEVIATION ANGLE OF TRANSITION CURVE
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Lc LENGTH OF CURVE
Es APEX DISTANCE
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PROFILE LEGEND
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File name	Designed by	Approved by	Sheets
BU-P&P-68 TO 73	SURYA KIRAN	SHIVAPRASAD	71 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
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RAJKOT-360 001, GUJARAT

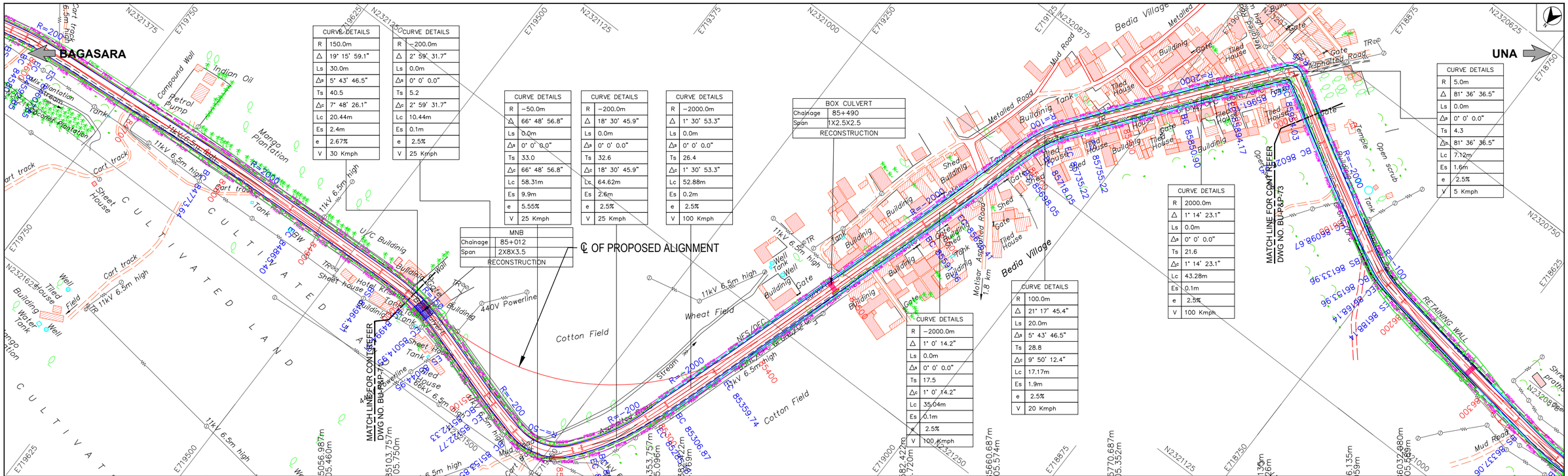
PROJECT

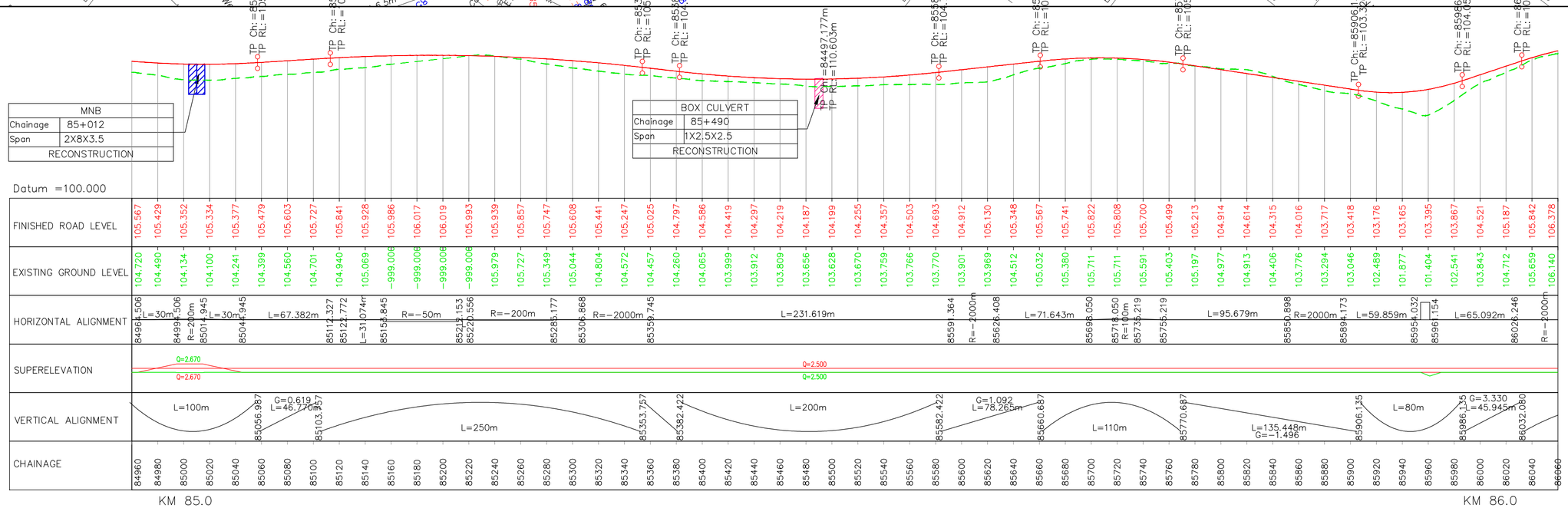
CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 84/000 KM TO 85/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-71





FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
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- MAJOR BRIDGE, FLYOVER
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- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1.Depiction of the structures in drawings is indicative only.
2.All dimensions are in meters.

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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-68 TO 73	SURYA KIRAN	SHIVAPRASAD	72 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

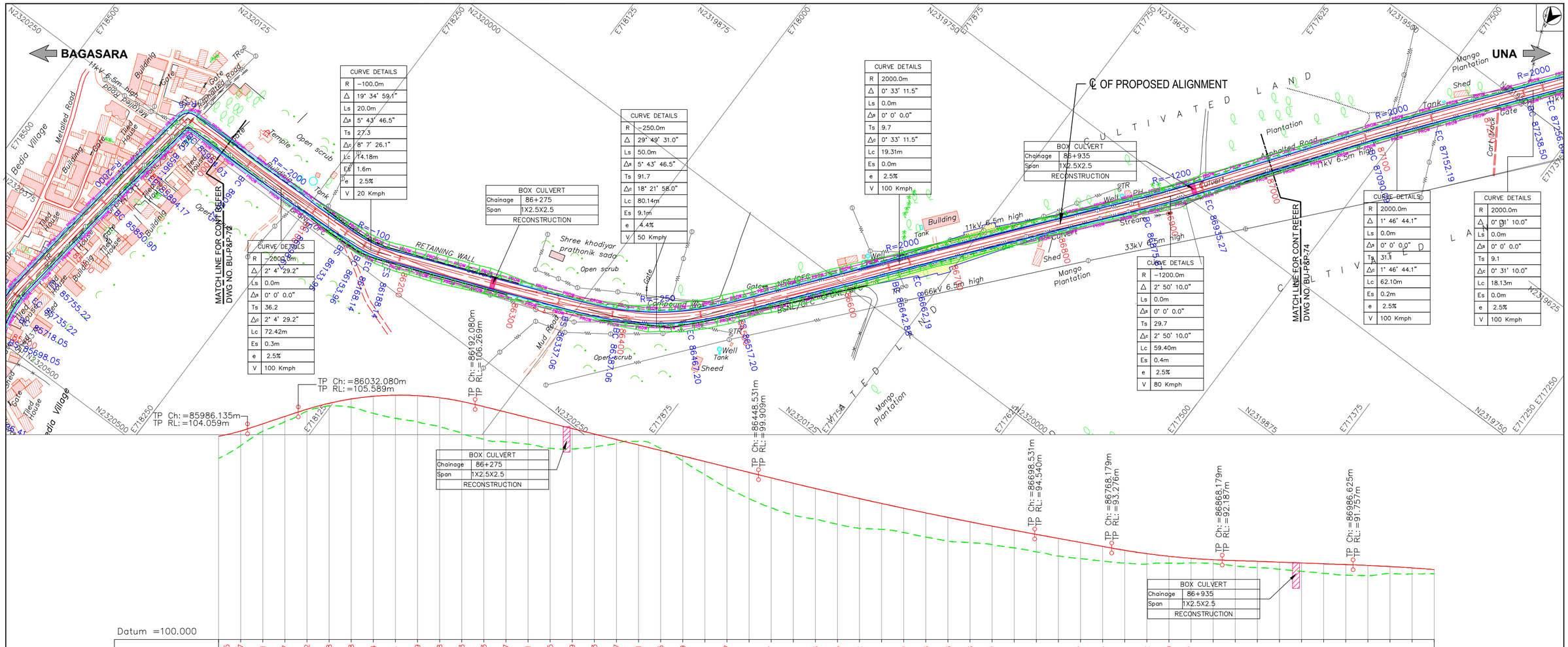
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 85/000 KM TO 86/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-72



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R RADIUS
Δ INCLUDED ANGLE
Ls TRANSITION/SPIRAL LENGTH
Δs DEVIATION ANGLE OF TRANSITION CURVE
Ts LENGTH OF TANGENT DISTANCE
Δc DEVIATION ANGLE OF CIRCULAR CURVE
Lc LENGTH OF CURVE
Es APEX DISTANCE
e SUPER ELEVATION
V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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Note:
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21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU-P&P-68 TO 73	SURYA KIRAN	SHIVAPRASAD	73 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

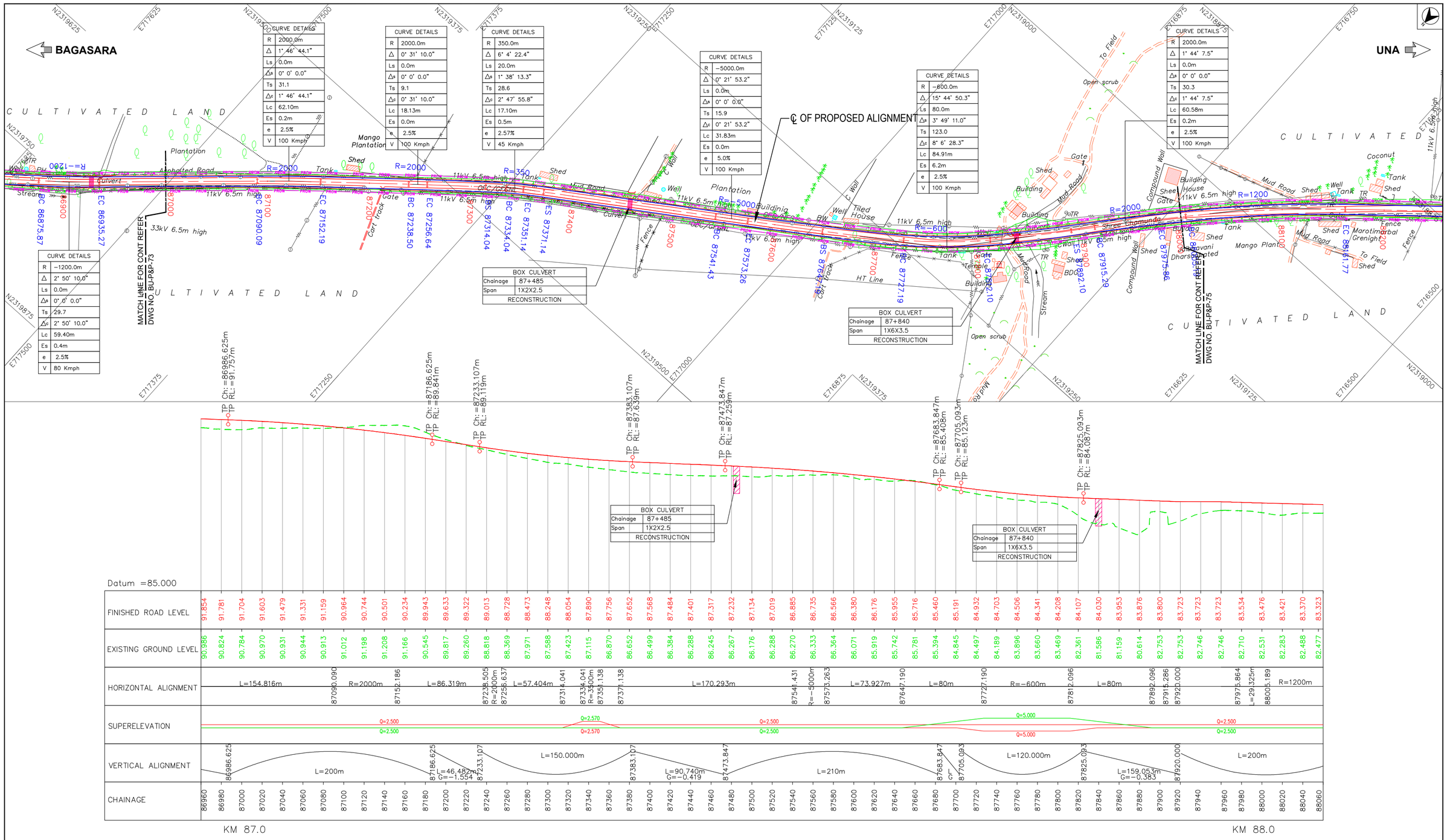
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 86/000 KM TO 87/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-73



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU–P&P–74 TO 79	SURYA KIRAN	SHIVAPRASAD	74 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

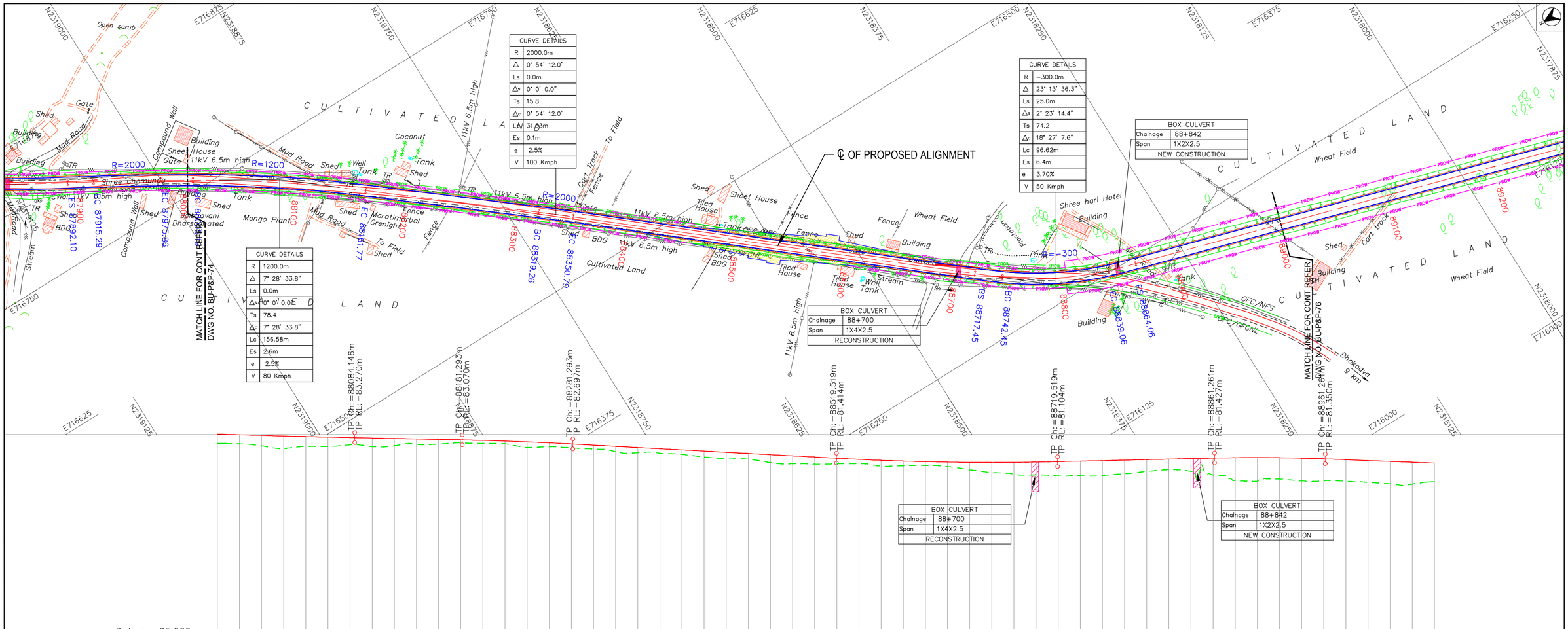
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 87/000 KM TO 88/000 KM

Plot Size : (A2 Size) | DRG.NO : BU–P&P–74



LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
- R RADIUS
- Δ INCLUDED ANGLE
- Ls TRANSITION/SPIRAL LENGTH
- Δs DEVIATION ANGLE OF TRANSITION CURVE
- Ts LENGTH OF TANGENT DISTANCE
- Δc DEVIATION ANGLE OF CIRCULAR CURVE
- Lc LENGTH OF CURVE
- Es APEX DISTANCE
- e SUPER ELEVATION
- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
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File name	Designed by	Approved by	Sheets
BU−P&P−74 TO 79	SURYA KIRAN	SHIVAPRASAD	75 OF 88

FDPR

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

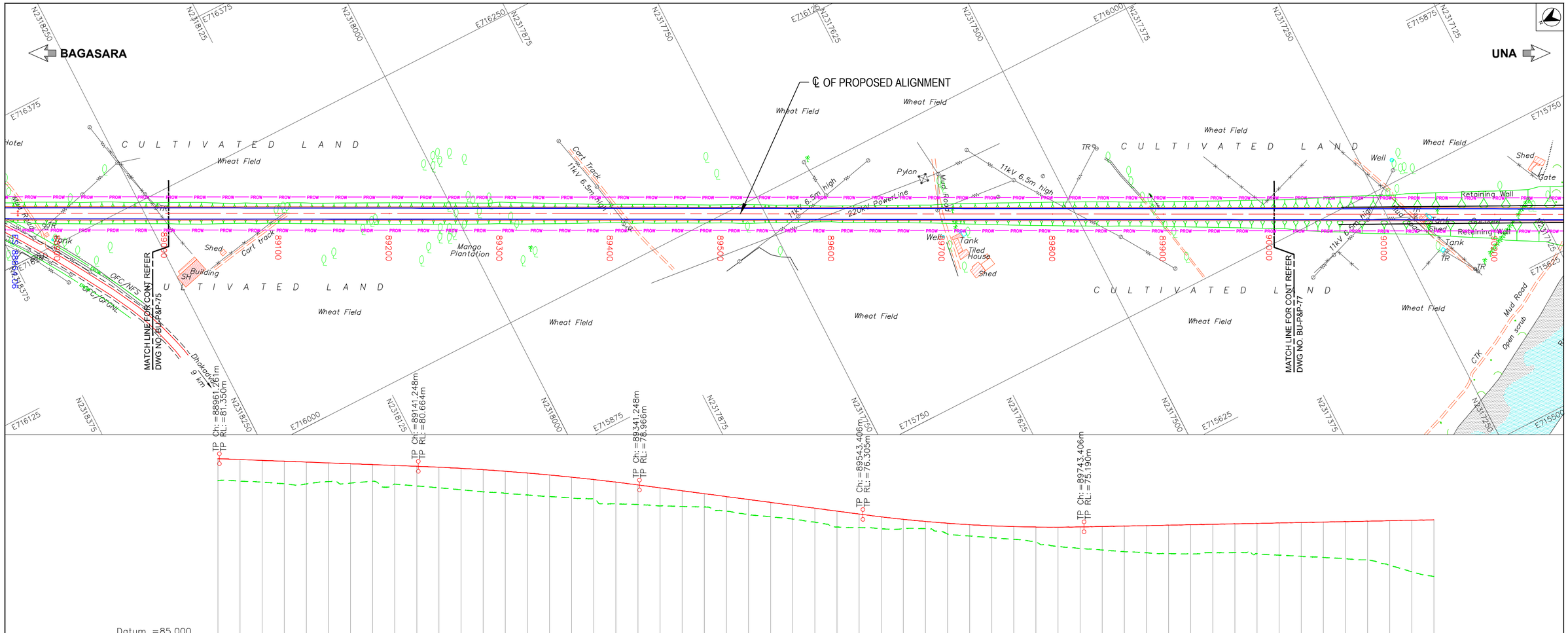
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 88/000 KM TO 89/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−75



Datum =85.000

CHAINAGE	FINISHED ROAD LEVEL	EXISTING GROUND LEVEL
88960	81.355	79.378
88980	81.279	79.324
89000	81.203	79.227
89020	81.126	79.090
89040	81.050	79.073
89060	80.974	79.290
89080	80.898	79.141
89100	80.821	79.310
89120	80.745	79.058
89140	80.669	78.885
89160	80.584	78.726
89180	80.481	78.538
89200	80.359	78.354
89220	80.219	78.223
89240	80.059	78.074
89260	79.881	77.936
89280	79.685	77.797
89300	79.470	77.740
89320	79.235	77.281
89340	78.983	77.212
89360	78.719	77.080
89380	78.456	77.038
89400	78.193	76.990
89420	77.930	76.620
89440	77.666	76.299
89460	77.403	76.105
89480	77.140	75.896
89500	76.877	75.617
89520	76.613	75.176
89540	76.350	75.130
89560	76.097	75.019
89580	75.874	75.019
89600	75.682	75.023
89620	75.520	74.542
89640	75.388	74.361
89660	75.286	74.210
89680	75.215	74.066
89700	75.174	73.830
89720	75.164	73.420
89740	75.183	73.234
89760	75.223	73.094
89780	75.263	72.940
89800	75.304	72.851
89820	75.344	72.777
89840	75.384	72.752
89860	75.424	72.850
89880	75.464	72.870
89900	75.504	72.758
89920	75.545	72.630
89940	75.585	72.527
89960	75.625	72.431
89980	75.665	72.319
90000	75.705	72.232
90020	75.745	71.712
90040	75.786	71.125
90060	75.826	70.702

HORIZONTAL ALIGNMENT: L=2493.268m

SUPERELEVATION: Q=2.500 (89140 – 89743.406); Q=2.500 (89743.406 – 90060)

VERTICAL ALIGNMENT: 88961.261; L=179.987m G=-0.381; 89141.248; L=200m; 89341.248; L=202.158m G=-1.316; 89543.406; L=200m; 89743.406; G=0.201 L=403.148m

KM 89.0 KM 90.0

FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
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- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
△	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
△s	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
△c	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
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BU-P&P-74 TO 79	SURYA KIRAN	SHIVAPRASAD	76 OF 88

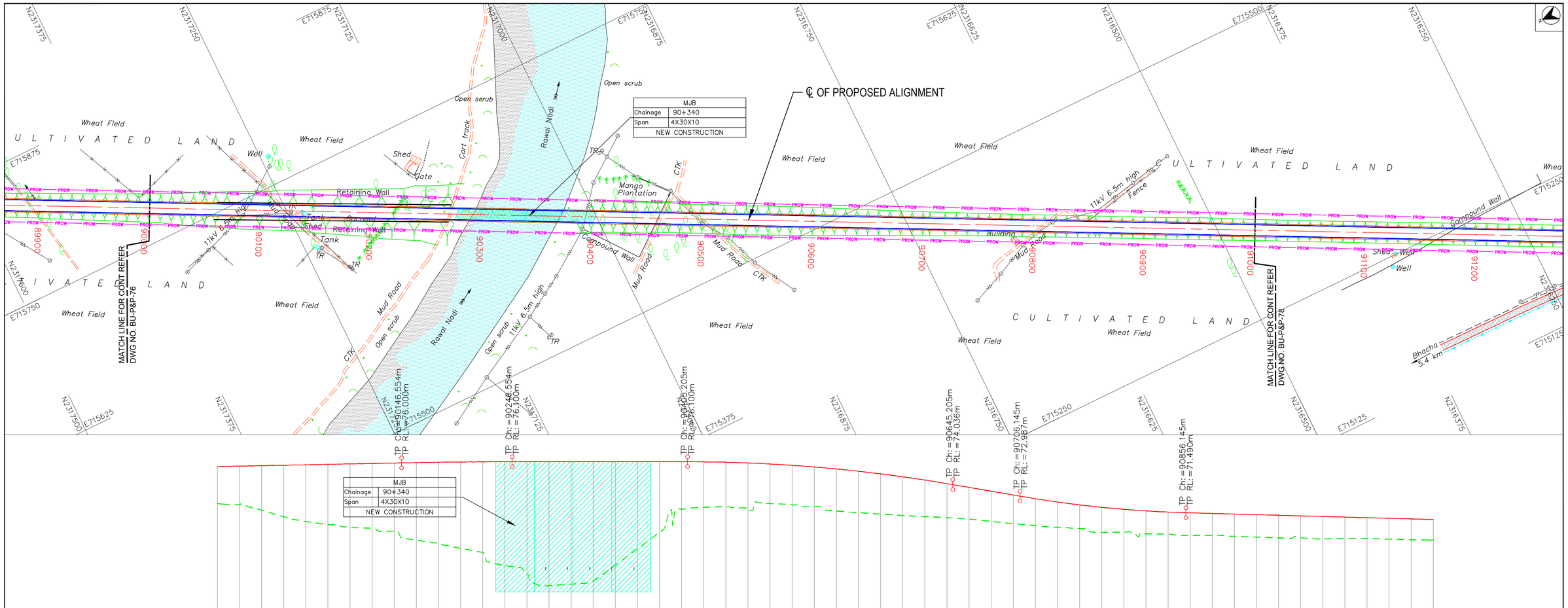
CLIENT: NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT: CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 89/000 KM TO 90/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-76



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
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- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE 45
- BEGINNING & END OF SPIRAL BS & ES
- BEGINNING & END OF CURVE BC & EC
- RADIUS OF CURVE R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
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- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT
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- △ INCLUDED ANGLE
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- V SPEED

PROFILE LEGEND

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BU-P&P-74 TO 79	SURYA KIRAN	SHIVAPRASAD	77 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

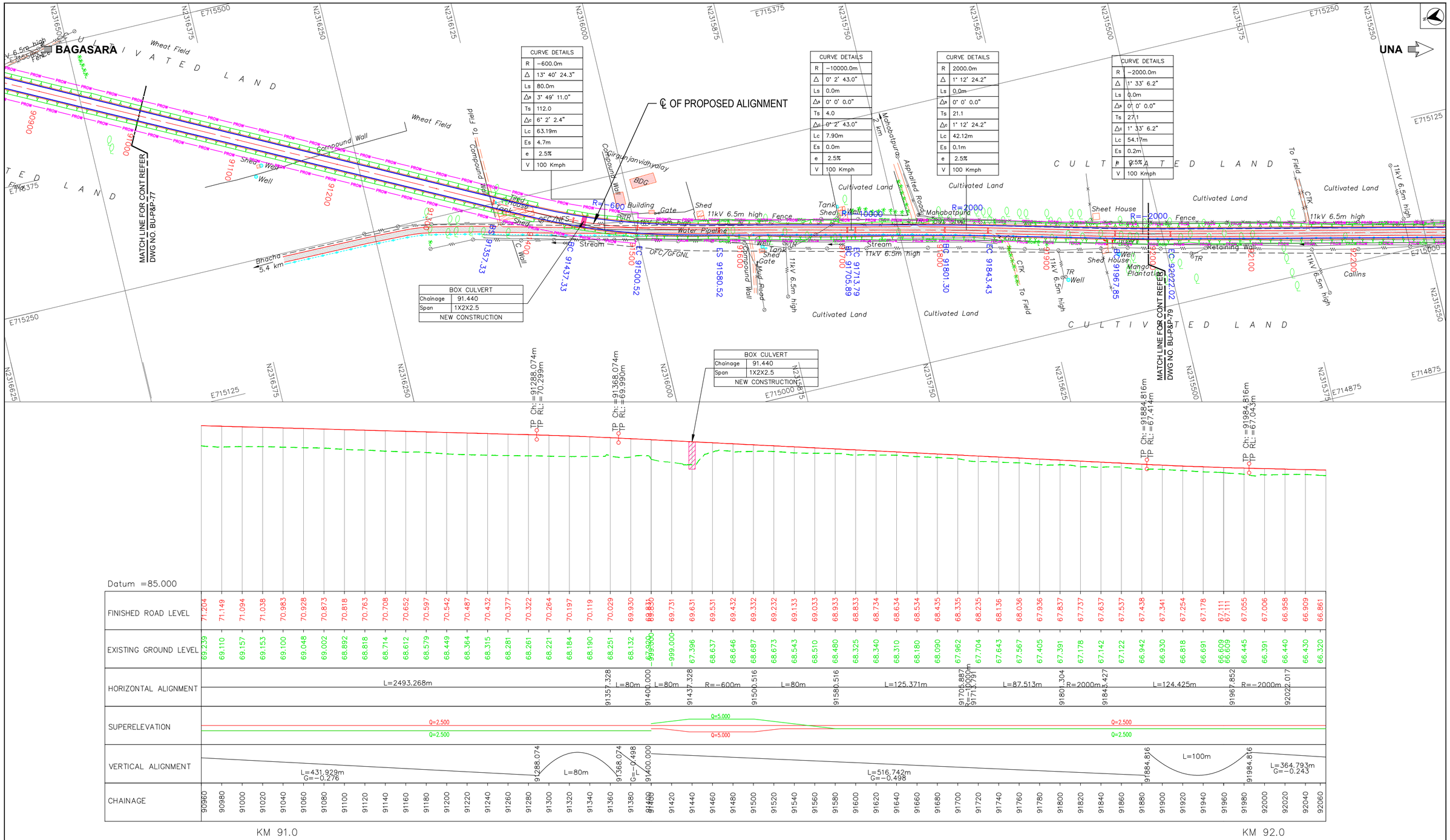
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 90/000 KM TO 91/000 KM

Plot Size : (A2 Size) DRG.NO : BU-P&P-77



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
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- Lc LENGTH OF CURVE
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- V SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
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Note:
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BU-P&P-74 TO 79	SURYA KIRAN	SHIVAPRASAD	78 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

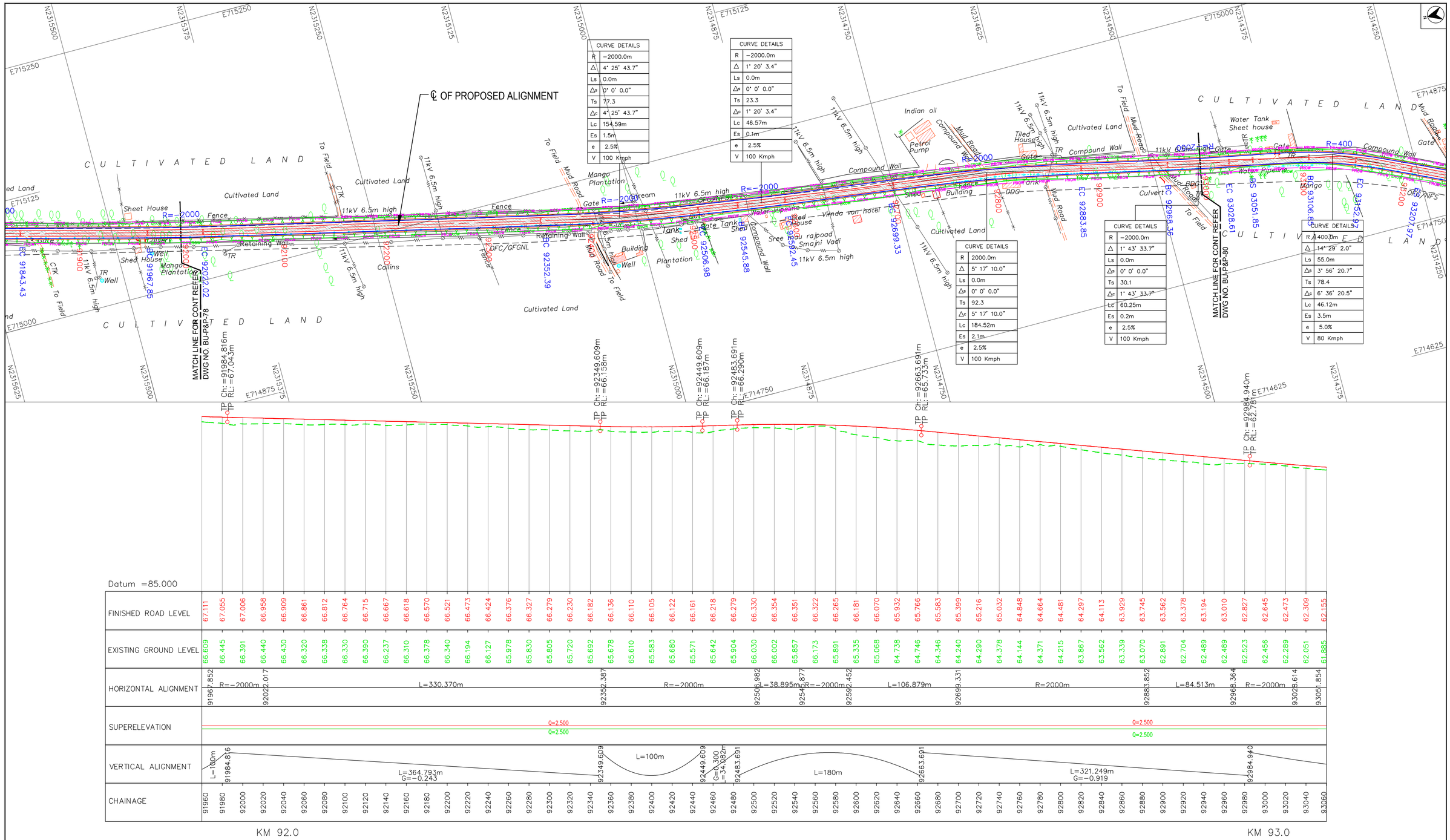
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 91/000 KM TO 92/000 KM

Plot Size : (A2 Size) | DRG.NO : BU-P&P-78



CURVE DETAILS	
R	−2000.0m
△	4° 25' 43.7"
Ls	0.0m
△s	0° 0' 0.0"
Ts	77.3
△c	4° 25' 43.7"
Lc	154.59m
Es	1.5m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
△	1° 20' 3.4"
Ls	0.0m
△s	0° 0' 0.0"
Ts	23.3
△c	1° 20' 3.4"
Lc	46.57m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
△	5° 17' 10.0"
Ls	0.0m
△s	0° 0' 0.0"
Ts	92.3
△c	5° 17' 10.0"
Lc	184.52m
Es	2.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
△	1° 43' 33.7"
Ls	0.0m
△s	0° 0' 0.0"
Ts	30.1
△c	1° 43' 33.7"
Lc	60.25m
Es	0.2m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	400.0m
△	14° 29' 2.0"
Ls	55.0m
△s	3° 56' 20.7"
Ts	78.4
△c	6° 36' 20.5"
Lc	46.12m
Es	3.5m
e	5.0%
V	80 Kmph

FDPR

LEGEND

PROPOSED CENTRELINE
PROPOSED CARRIAGEWAY
PROPOSED SERVICE ROAD
PROPOSED EARTHEN SHOULDER
PROPOSED DRAIN
PROPOSED ROW — PROW
EXISTING ROW — EROW
EXISTING CARRIAGEWAY
ELEVATED HIGHWAY
MAJOR BRIDGE, FLYOVER
MINOR BRIDGE

ROAD OVER BRIDGE
BOX, PIPE CULVERTS
VUP,PUP,LVUP,CUP
VEHICULAR OVER PASS
PROPOSED CHAINAGE IN METRE — 45
BEGINNING & END OF SPIRAL — BS & ES
BEGINNING & END OF CURVE — BC & EC
RADIUS OF CURVE — R=500
PROPOSED BRIDGE
EXISTING BRIDGE
PROPOSED CULVERT
EXISTING CULVERT

TOELINES FOR EMBANKMENT
TOELINES FOR CUT
R RADIUS
△ INCLUDED ANGLE
Ls TRANSITION/SPIRAL LENGTH
△s DEVIATION ANGLE OF TRANSITION CURVE
Ts LENGTH OF TANGENT DISTANCE
△c DEVIATION ANGLE OF CIRCULAR CURVE
Lc LENGTH OF CURVE
Es APEX DISTANCE
e SUPER ELEVATION
V SPEED

PROFILE LEGEND
Finished Road Level
Existing Road Level
TP: Tangent points
CH: Chainage
RL: Reduced Level

Note:
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2.All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU−P&P−74 TO 79	SURYA KIRAN	SHIVAPRASAD	79 OF 88

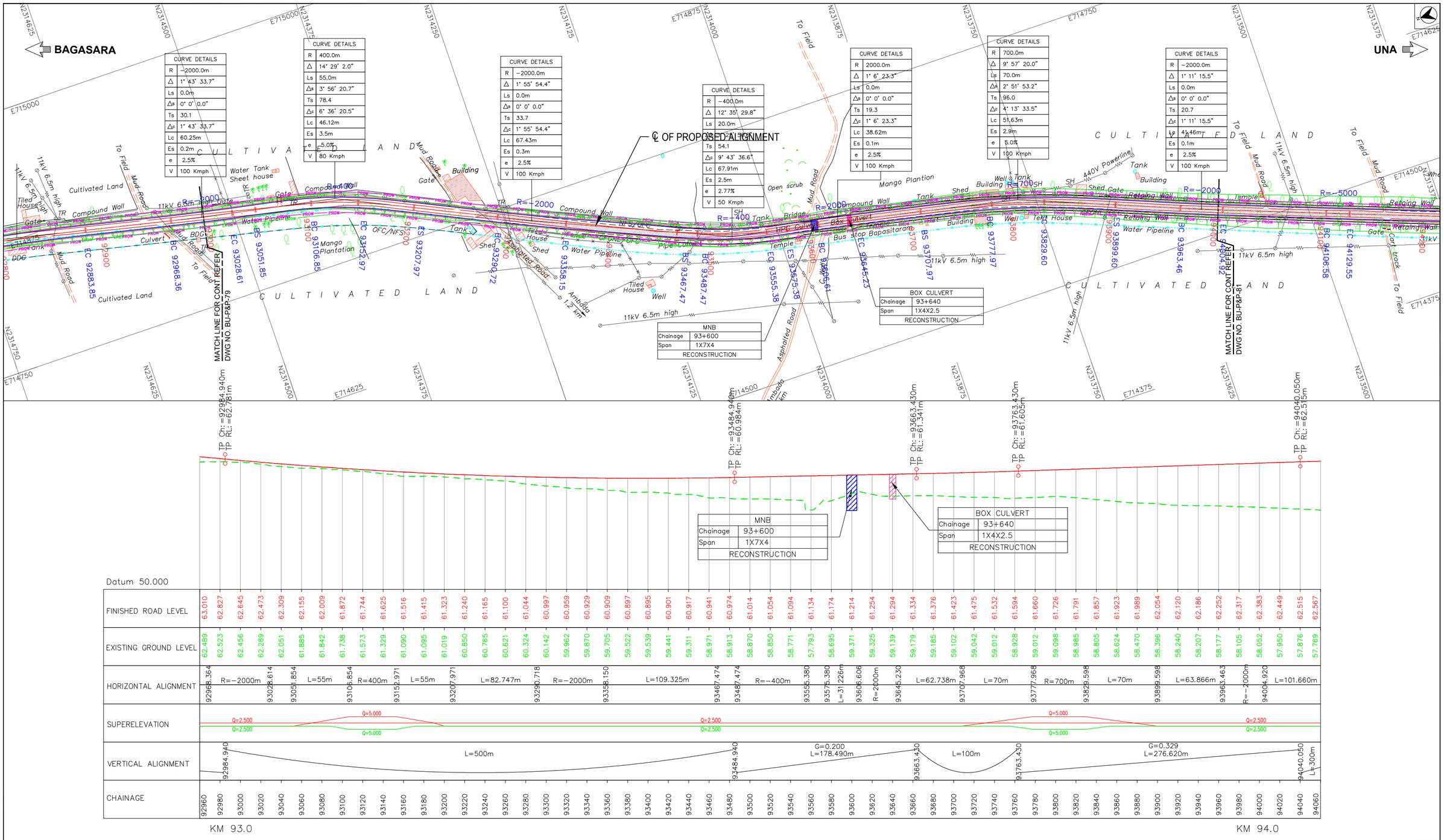
CLIENT
NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT
CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 92/000 KM TO 93/000 KM

Plot Size : (A2 Size)
DRG.NO : BU−P&P−79



FDPR

LEGEND

PROPOSED CENTRELINE	
PROPOSED CARRIAGEWAY	
PROPOSED SERVICE ROAD	
PROPOSED EARTHEN SHOULDER	
PROPOSED DRAIN	
PROPOSED ROW	PROW
EXISTING ROW	EROW
EXISTING CARRIAGEWAY	
ELEVATED HIGHWAY	
MAJOR BRIDGE, FLYOVER	
MINOR BRIDGE	
ROAD OVER BRIDGE	
BOX, PIPE CULVERTS	
VUP,PUP,LVUP,CUP	
VEHICULAR OVER PASS	
PROPOSED CHAINAGE IN METRE	45
BEGINNING & END OF SPIRAL	BS & ES
BEGINNING & END OF CURVE	BC & EC
RADIUS OF CURVE	R=500
PROPOSED BRIDGE	
EXISTING BRIDGE	
PROPOSED CULVERT	
EXISTING CULVERT	
TOELINES FOR EMBANKMENT	
TOELINES FOR CUT	

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

Finished Road Level	
Existing Road Level	
TP:	Tangent points
CH:	Chainage
RL:	Reduced Level

Note:
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2.All dimensions are in meters.

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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR :1:2500 VER :1:250
File name BU-P&P-80 TO 85	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 80 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

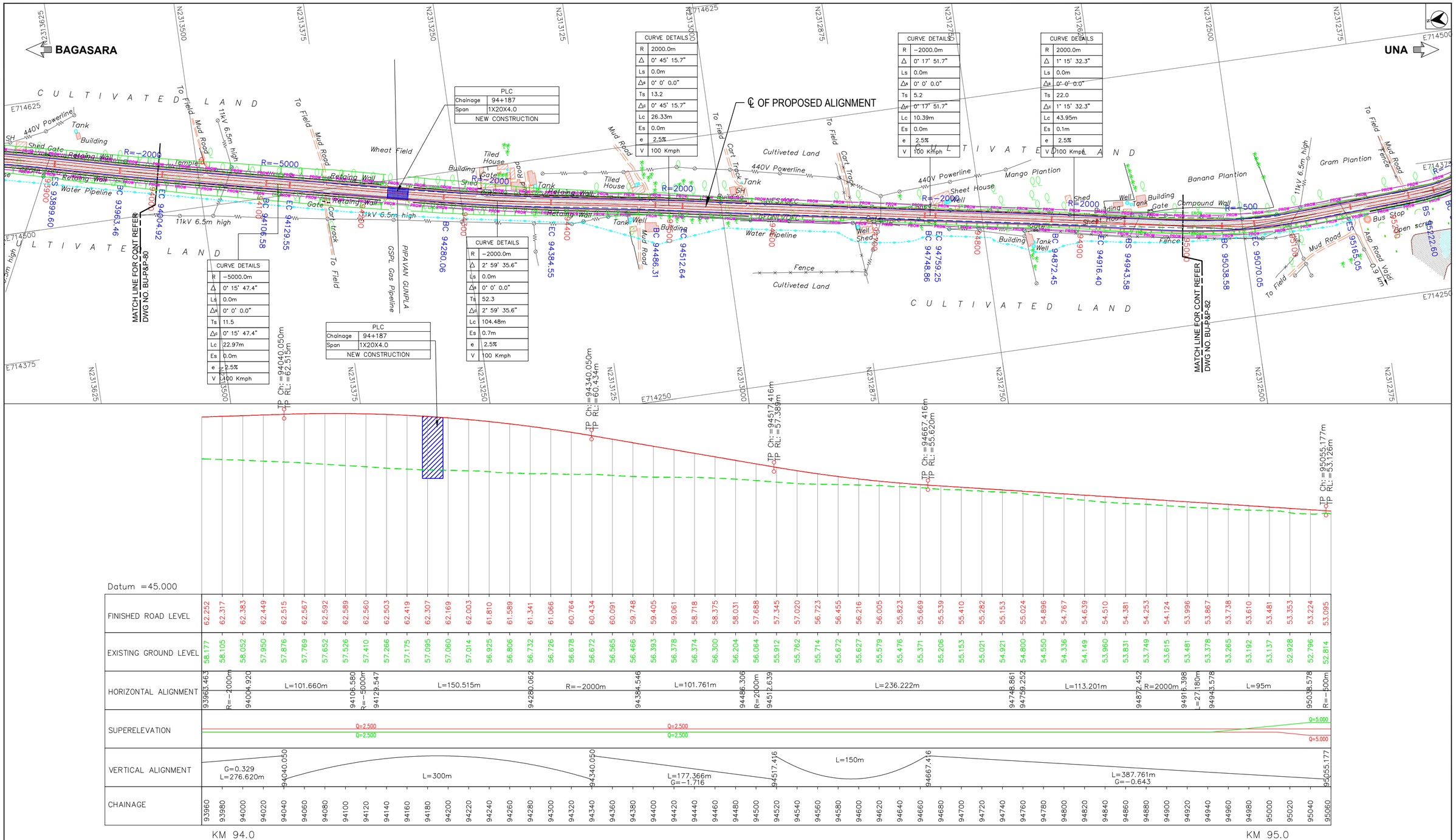
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF
UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA
NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 93/000 KM TO 94/000 KM

Plot Size : (A2 Size) | DRG.NO : BU–P&P–80



PLC	
Chainage	94+187
Span	1X20X4.0
NEW CONSTRUCTION	

CURVE DETAILS	
R	2000.0m
Δ	0° 45' 15.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	13.2
Δc	0° 45' 15.7"
Lc	26.33m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	0° 17' 51.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.2
Δc	0° 17' 51.7"
Lc	10.39m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 15' 32.3"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	22.0
Δc	1° 15' 32.3"
Lc	43.95m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−5000.0m
Δ	0° 15' 47.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	11.5
Δc	0° 15' 47.4"
Lc	22.97m
Es	0.0m
e	2.5%
V	100 Kmph

PLC	
Chainage	94+187
Span	1X20X4.0
NEW CONSTRUCTION	

CURVE DETAILS	
R	−2000.0m
Δ	2° 59' 35.6"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	52.3
Δc	2° 59' 35.6"
Lc	104.48m
Es	0.7m
e	2.5%
V	100 Kmph

LEGEND			
PROPOSED CENTRELINE	ROAD OVER BRIDGE	TOELINES FOR EMBANKMENT	
PROPOSED CARRIAGEWAY	BOX, PIPE CULVERTS	TOELINES FOR CUT	
PROPOSED SERVICE ROAD	VUP,PUP,LVUP,CUP	R	RADIUS
PROPOSED EARTHEN SHOULDER	VEHICULAR OVER PASS	Δ	INCLUDED ANGLE
PROPOSED DRAIN	PROPOSED CHAINAGE IN METRE 45	Ls	TRANSITION/SPIRAL LENGTH
PROPOSED ROW	BEGINNING & END OF SPIRAL BS & ES	Δs	DEVIATION ANGLE OF TRANSITION CURVE
EXISTING ROW	BEGINNING & END OF CURVE BC & EC	Ts	LENGTH OF TANGENT DISTANCE
EXISTING CARRIAGEWAY	RADIUS OF CURVE R=500	Δc	DEVIATION ANGLE OF CIRCULAR CURVE
ELEVATED HIGHWAY	PROPOSED BRIDGE	Lc	LENGTH OF CURVE
MAJOR BRIDGE, FLYOVER	EXISTING BRIDGE	Es	APEX DISTANCE
MINOR BRIDGE	PROPOSED CULVERT	e	SUPER ELEVATION
	EXISTING CULVERT	V	SPEED

PROFILE LEGEND
- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR :1:2500 VER :1:250
File name	Designed by	Approved by	Sheets
BU-P&P-80 TO 85	SURYA KIRAN	SHIVAPRASAD	81 OF 88

FDPR

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

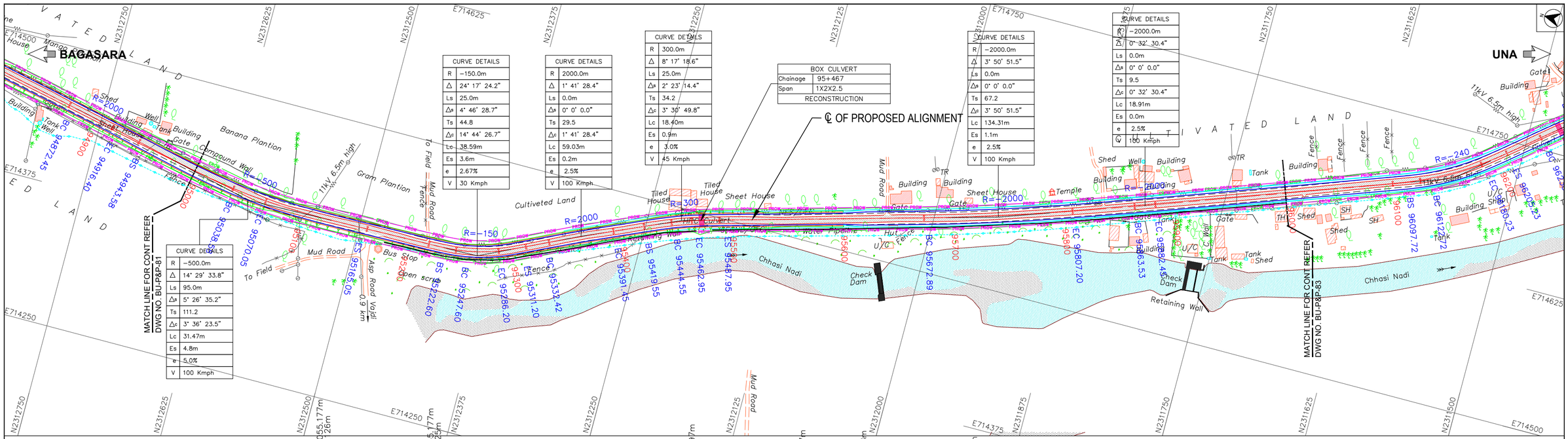
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 94/000 KM TO 95/000 KM

Plot Size : (A2 Size) DRG.NO : BU-P&P-81



CURVE DETAILS	
R	−150.0m
Δ	24° 17' 24.2"
Ls	25.0m
Δs	4° 46' 28.7"
Ts	44.8
Δc	14° 44' 26.7"
Lc	38.59m
Es	3.6m
e	2.67%
V	30 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 41' 28.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	29.5
Δc	1° 41' 28.4"
Lc	59.03m
Es	0.2m
e	2.5%
V	100 Kmph

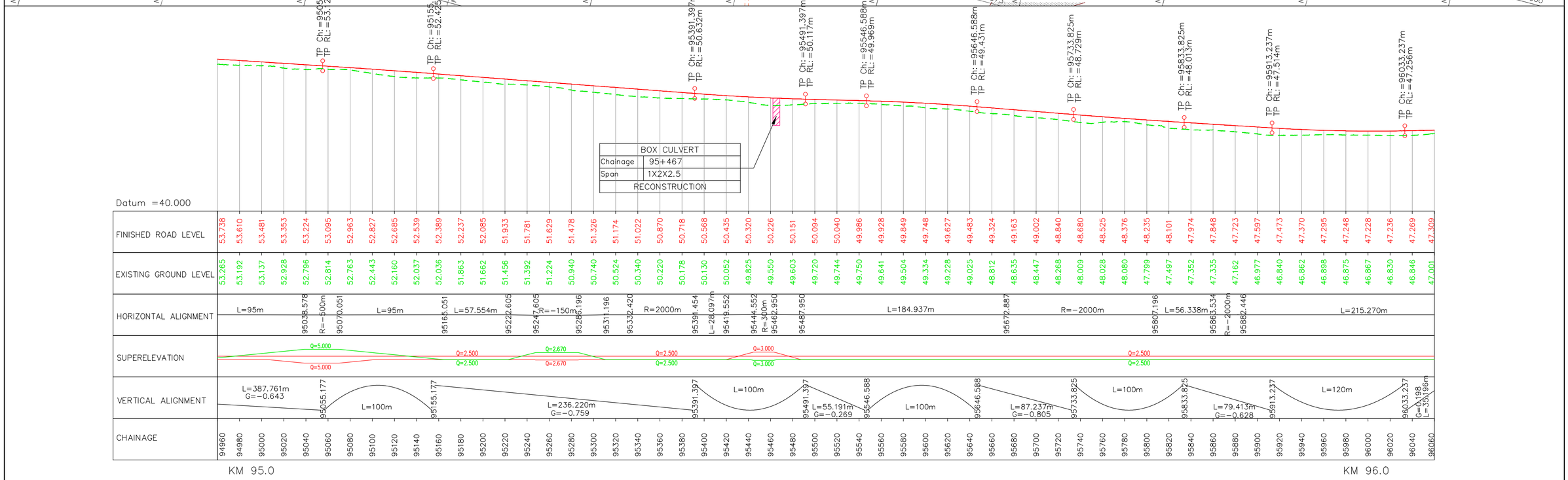
CURVE DETAILS	
R	300.0m
Δ	8° 17' 18.6"
Ls	25.0m
Δs	2° 23' 14.4"
Ts	34.2
Δc	3° 30' 49.8"
Lc	18.40m
Es	0.9m
e	3.0%
V	45 Kmph

BOX CULVERT	
Chainage	95+467
Span	1X2X2.5
RECONSTRUCTION	

CURVE DETAILS	
R	−2000.0m
Δ	3° 50' 51.5"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	67.2
Δc	3° 50' 51.5"
Lc	134.31m
Es	1.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−2000.0m
Δ	0° 32' 30.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	9.5
Δc	0° 32' 30.4"
Lc	18.91m
Es	0.0m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−500.0m
Δ	14° 29' 33.8"
Ls	95.0m
Δs	5° 26' 35.2"
Ts	111.2
Δc	3° 36' 23.5"
Lc	31.47m
Es	4.8m
e	5.0%
V	100 Kmph



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

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Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	Designed by	Approved by	Sheets
BU-P&P-80 TO 85	SURYA KIRAN	SHIVAPRASAD	82 OF 88

SECON

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

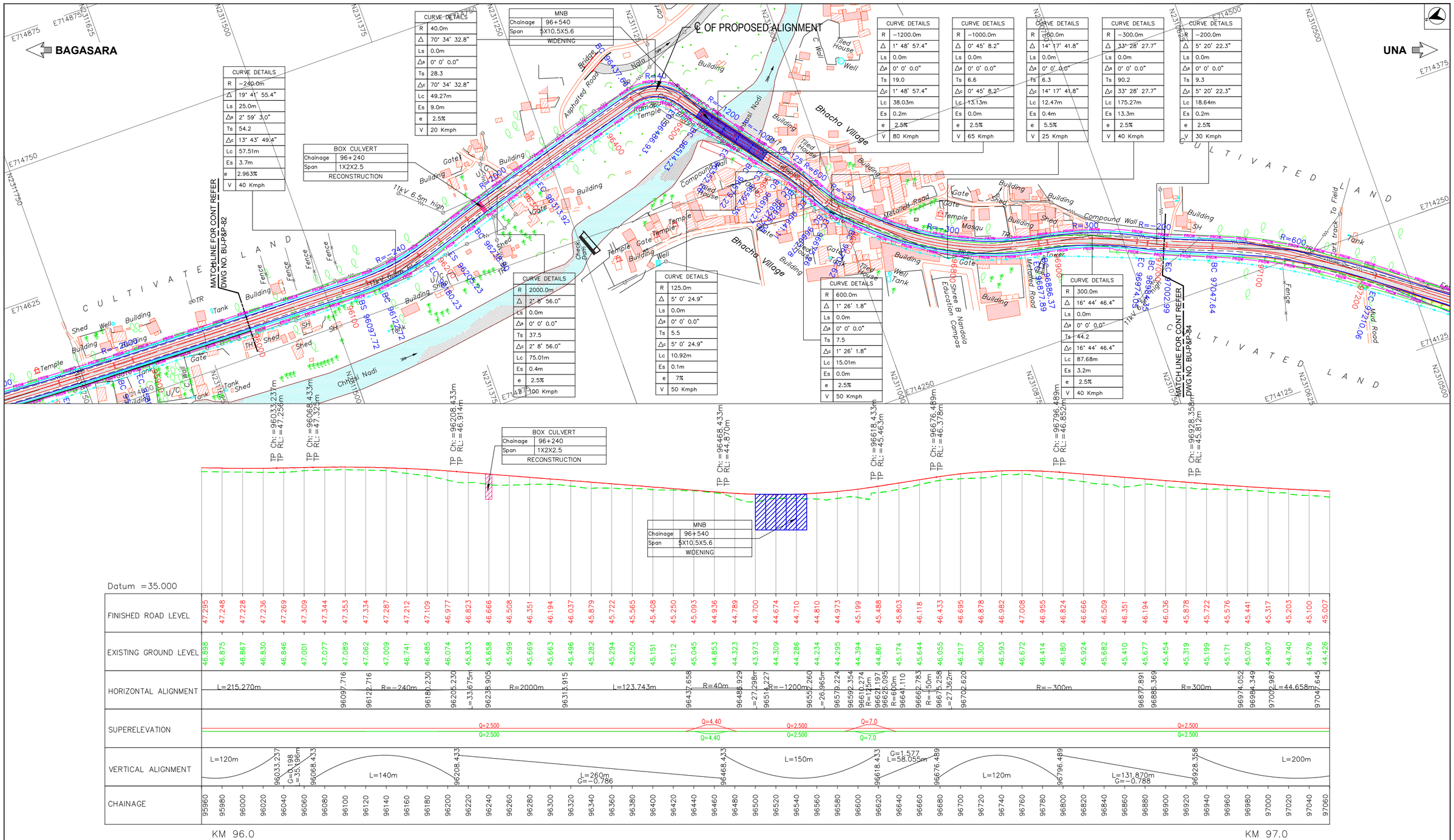
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 95/000 KM TO 96/000 KM

Plot Size : (A2 Size)

DRG.NO : BU−P&P−82



CURVE DETAILS	
R	−240.0m
Δ	19° 41' 55.4"
Ls	25.0m
Δs	2° 59' 3.0"
Ts	54.2
Δc	13° 43' 49.4"
Lc	57.51m
Es	3.7m
e	2.963%
V	40 Kmph

CURVE DETAILS	
R	40.0m
Δ	70° 34' 32.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	28.3
Δc	70° 34' 32.8"
Lc	49.27m
Es	9.0m
e	2.5%
V	20 Kmph

MNB	
Chainage	96+540
Span	5X10.5X5.6
WIDENING	

BOX CULVERT	
Chainage	96+240
Span	1X2X2.5
RECONSTRUCTION	

CURVE DETAILS	
R	−1200.0m
Δ	1° 48' 57.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	19.0
Δc	1° 48' 57.4"
Lc	38.03m
Es	0.2m
e	2.5%
V	80 Kmph

CURVE DETAILS	
R	−1000.0m
Δ	0° 45' 8.2"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	6.6
Δc	0° 45' 8.2"
Lc	13.13m
Es	0.0m
e	2.5%
V	65 Kmph

CURVE DETAILS	
R	250.0m
Δ	14° 17' 41.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	6.3
Δc	14° 17' 41.8"
Lc	12.47m
Es	0.4m
e	5.5%
V	25 Kmph

CURVE DETAILS	
R	−300.0m
Δ	33° 28' 27.7"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	90.2
Δc	33° 28' 27.7"
Lc	175.27m
Es	13.3m
e	2.5%
V	40 Kmph

CURVE DETAILS	
R	−200.0m
Δ	5° 20' 22.3"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	9.3
Δc	5° 20' 22.3"
Lc	18.64m
Es	0.2m
e	2.5%
V	30 Kmph

CURVE DETAILS	
R	2000.0m
Δ	2° 8' 56.0"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	37.5
Δc	2° 8' 56.0"
Lc	75.01m
Es	0.4m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	125.0m
Δ	5° 0' 24.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	5.5
Δc	5° 0' 24.9"
Lc	10.92m
Es	0.1m
e	7%
V	50 Kmph

CURVE DETAILS	
R	600.0m
Δ	1° 26' 1.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	7.5
Δc	1° 26' 1.8"
Lc	15.01m
Es	0.0m
e	2.5%
V	50 Kmph

CURVE DETAILS	
R	300.0m
Δ	16° 44' 46.4"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	44.2
Δc	16° 44' 46.4"
Lc	87.68m
Es	3.2m
e	2.5%
V	40 Kmph

BOX CULVERT	
Chainage	96+240
Span	1X2X2.5
RECONSTRUCTION	

MNB	
Chainage	96+540
Span	5X10.5X5.6
WIDENING	

TP Ch: =96033.237m TP RL: =47.256m
TP Ch: =96068.433m TP RL: =47.322m
TP Ch: =96208.433m TP RL: =46.914m
TP Ch: =96468.433m TP RL: =44.870m
TP Ch: =96618.433m TP RL: =45.463m
TP Ch: =96676.489m TP RL: =46.378m
TP Ch: =96796.489m TP RL: =46.852m
TP Ch: =96928.358m TP RL: =45.812m

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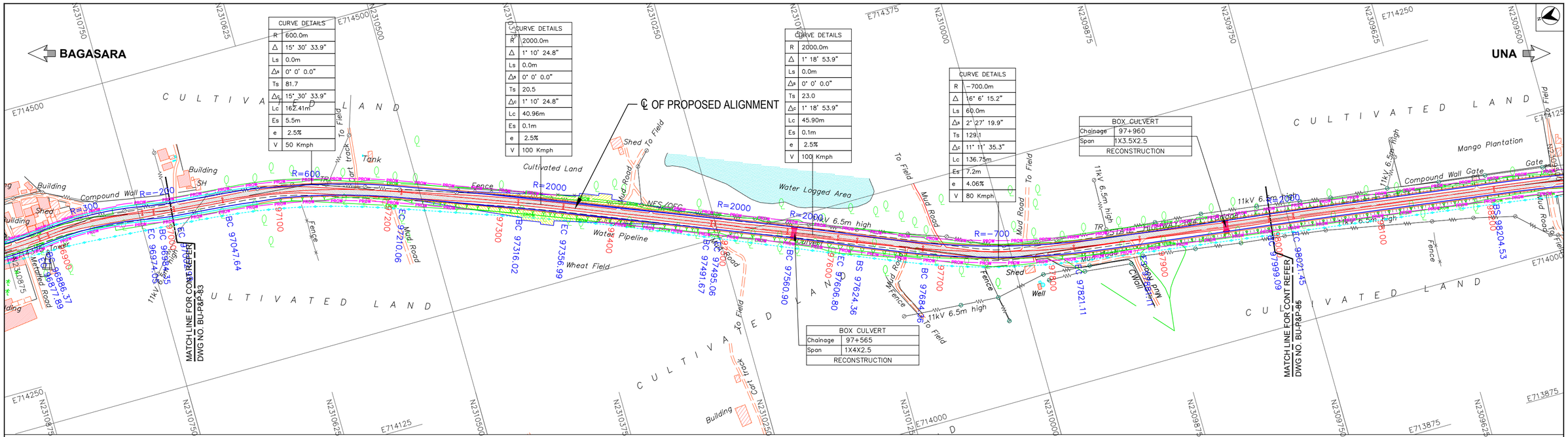


CURVE DETAILS	
R	600.0m
Δ	15° 30' 33.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	81.7
Δc	15° 30' 33.9"
Lc	162.41m
Es	5.5m
e	2.5%
V	50 Kmph

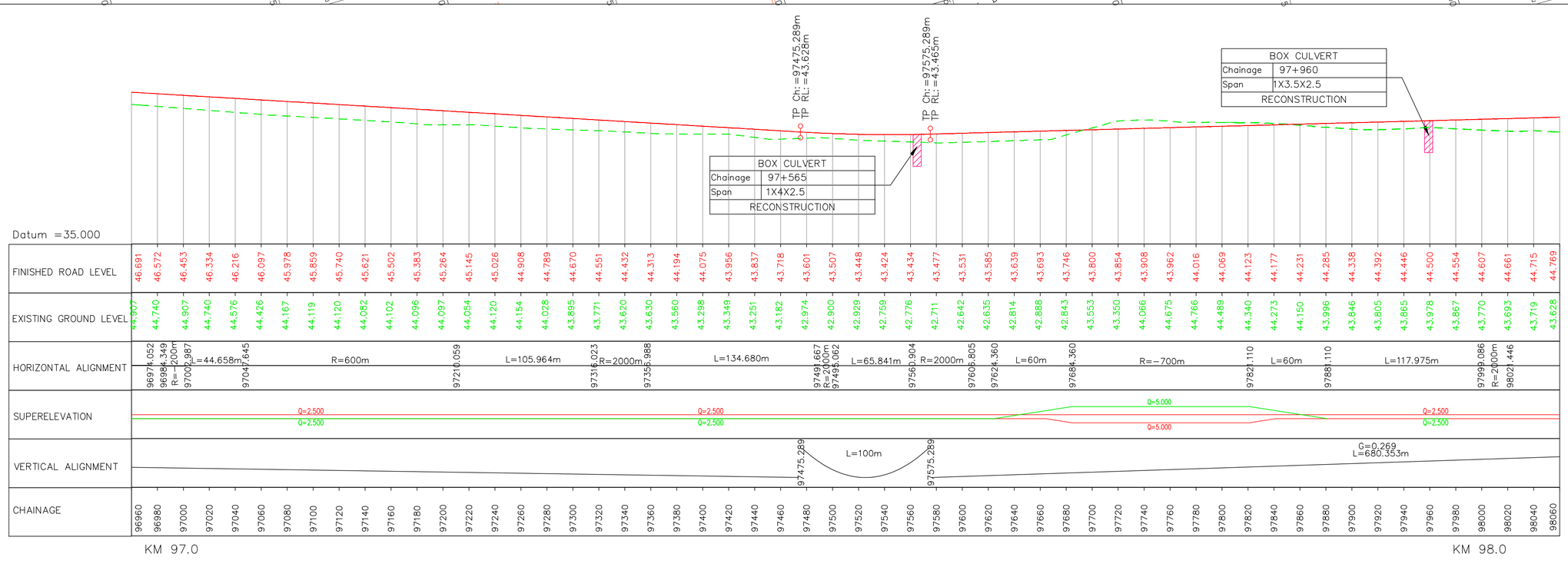
CURVE DETAILS	
R	2000.0m
Δ	1° 10' 24.8"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	20.5
Δc	1° 10' 24.8"
Lc	40.96m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	2000.0m
Δ	1° 18' 53.9"
Ls	0.0m
Δs	0° 0' 0.0"
Ts	23.0
Δc	1° 18' 53.9"
Lc	45.90m
Es	0.1m
e	2.5%
V	100 Kmph

CURVE DETAILS	
R	−700.0m
Δ	16° 6' 15.2"
Ls	60.0m
Δs	2° 27' 19.9"
Ts	129.1
Δc	11° 11' 35.3"
Lc	136.75m
Es	7.2m
e	4.06%
V	80 Kmph

BOX CULVERT	
Chainage	97+960
Span	1X3.5X2.5
RECONSTRUCTION	

BOX CULVERT	
Chainage	97+565
Span	1X4X2.5
RECONSTRUCTION	



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW (PROW)
- EXISTING ROW (EROW)
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- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
- EXISTING CULVERT
- TOELINES FOR EMBANKMENT
- TOELINES FOR CUT

R	RADIUS
Δ	INCLUDED ANGLE
Ls	TRANSITION/SPIRAL LENGTH
Δs	DEVIATION ANGLE OF TRANSITION CURVE
Ts	LENGTH OF TANGENT DISTANCE
Δc	DEVIATION ANGLE OF CIRCULAR CURVE
Lc	LENGTH OF CURVE
Es	APEX DISTANCE
e	SUPER ELEVATION
V	SPEED

PROFILE LEGEND

- Finished Road Level
- Existing Road Level
- TP: Tangent points
- CH: Chainage
- RL: Reduced Level

Note:
1. Depiction of the structures in drawings is indicative only.
2. All dimensions are in meters.

No	DATE	REVISIONS	BY	CHKD	APPD
3	15.04.25	Final Detailed Project Report	JTP	SM	SNV
2	06.02.25	Revised as per directions issued during meeting with SE, MORTH on 09.01.25 & 13.01.25	JTP	SM	SNV
1	10.12.24	Incorporating the suggestions Based on the meetings held with RO Gandhinagar & EE Rajkot on 25.09.24 & 24.10.24	JTP	SM	SNV
0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date	Drawn by	Checked by	Scale
21.11.2023	PATRICK	SRIKANTH	HOR : 1:2500 VER : 1:250
File name	**Designed by**	**Approved by**	**Sheets**
BU-P&P-80 TO 85	SURYA KIRAN	SHIVAPRASAD	84 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

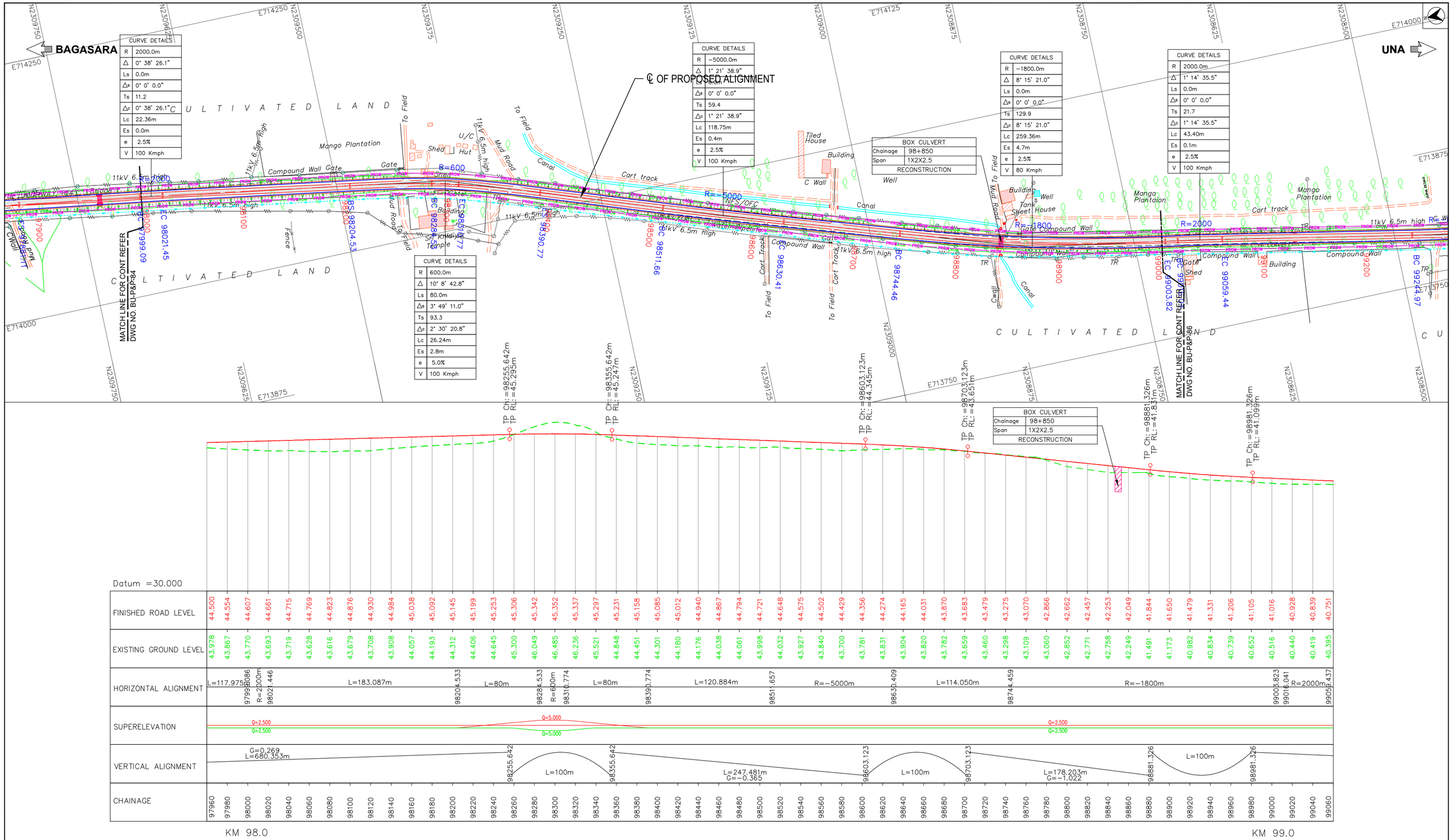
PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 97/000 KM TO 98/000 KM

Plot Size : (A2 Size) | DRG.NO : BU−P&P−84



FDPR

LEGEND

- PROPOSED CENTRELINE
- PROPOSED CARRIAGEWAY
- PROPOSED SERVICE ROAD
- PROPOSED EARTHEN SHOULDER
- PROPOSED DRAIN
- PROPOSED ROW
- EXISTING ROW
- EXISTING CARRIAGEWAY
- ELEVATED HIGHWAY
- MAJOR BRIDGE, FLYOVER
- MINOR BRIDGE
- ROAD OVER BRIDGE
- BOX, PIPE CULVERTS
- VUP,PUP,LVUP,CUP
- VEHICULAR OVER PASS
- PROPOSED CHAINAGE IN METRE — 45
- BEGINNING & END OF SPIRAL — BS & ES
- BEGINNING & END OF CURVE — BC & EC
- RADIUS OF CURVE — R=500
- PROPOSED BRIDGE
- EXISTING BRIDGE
- PROPOSED CULVERT
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0	05.09.24	Draft Detailed Project Report	JTP	SM	SNV

Date 21.11.2023	Drawn by PATRICK	Checked by SRIKANTH	Scale HOR : 1:2500 VER : 1:250
File name BU-P&P-80 TO 85	Designed by SURYA KIRAN	Approved by SHIVAPRASAD	Sheets 85 OF 88

CLIENT

NATIONAL HIGHWAY DIVISION, RAJKOT
DR. RAJENDRA PRASAD ROAD, KASHIVISHWANATH PLOT
RAJKOT-360 001, GUJARAT

PROJECT

CONSULTANCY SERVICES FOR UP GRADATION OF UNA - DHARI - BAGASARA - AMRELI - BABRA - JASDAN - CHOTILA NATIONAL HIGHWAY IN THE STATE OF GUJARAT

SECON

PLAN & PROFILE (NH-351K)
SECTION : BAGASARA TO UNA
CHAINAGE : FROM 98/000 KM TO 99/000 KM

Plot Size : (A2 Size) | DRG.NO : BU–P&P–85