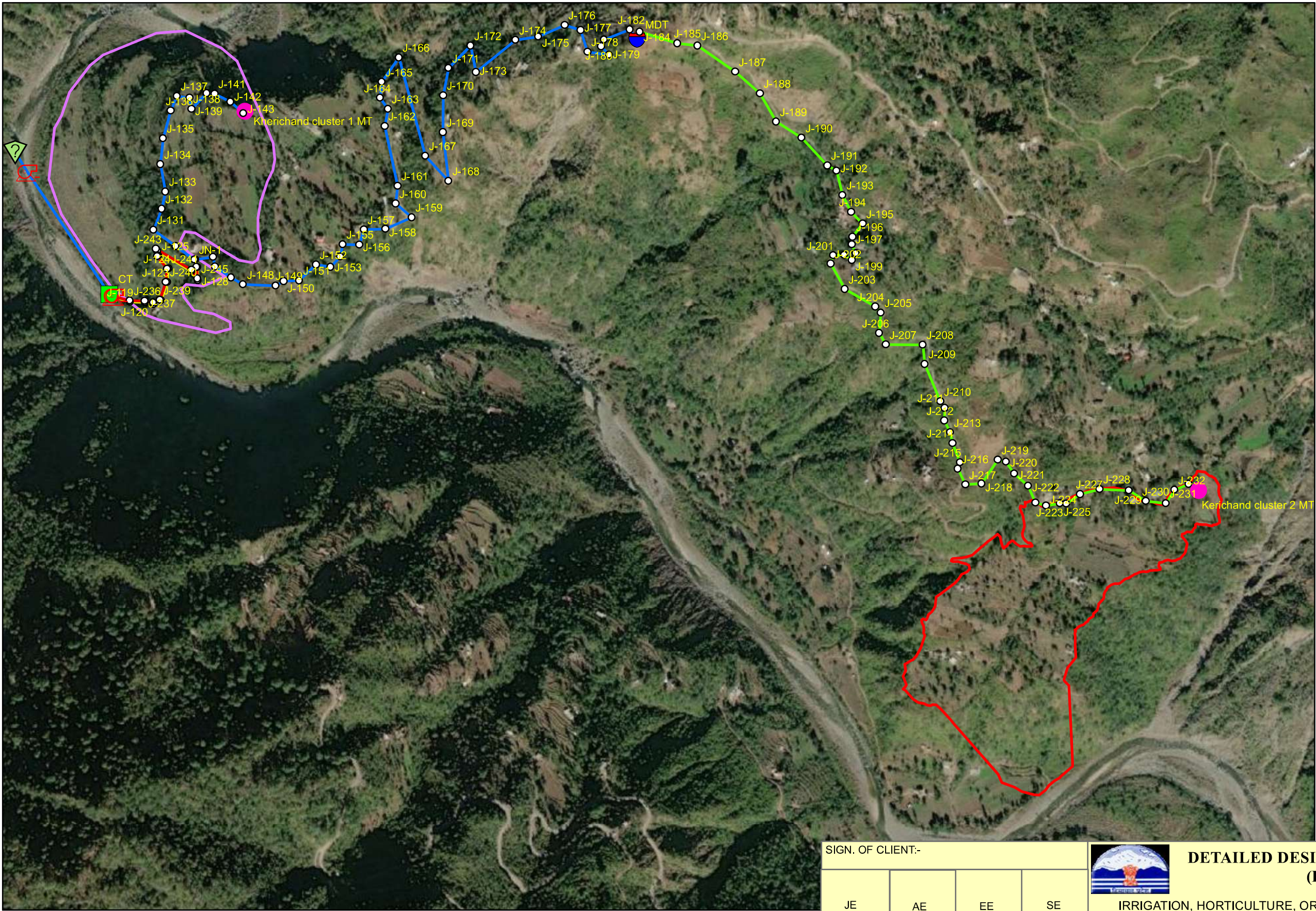


Legend

- Source
- Pump
- MDT
- MT
- TANK
- Junction
- Gravity Main 80mm Dia GI Pipe
- Rising Main 100mm Dia GI Pipe
- Rising Main 150mm Dia GI Pipe
- Rising Main 152.4 mm Dia MS Pipe
- KHAIRI_CHANDAN_1
- KHAIRI_CHANDAN_2

	SIGN.												
	INITIALS												
	REVISIONS												
P0	SIGN.												24-06-2022
	INITIALS	GKJ	SKAC	DVB							MK	DK	
	REVISIONS												
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD.	DATE
					CLEARED								

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File Name: 12503A-CV-35205-Rev-P0



DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TITLE:-

NETWORK DRAWING OF LIS KHERI CHANDAN (1&2) FOR NAHANI BLOCK, SIRMOUR DISTRICT.



TATACONSULTING ENGINEERS LIMITED. MUMBAI

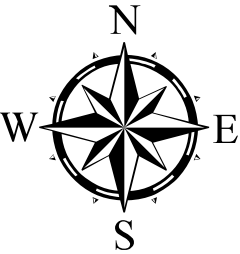
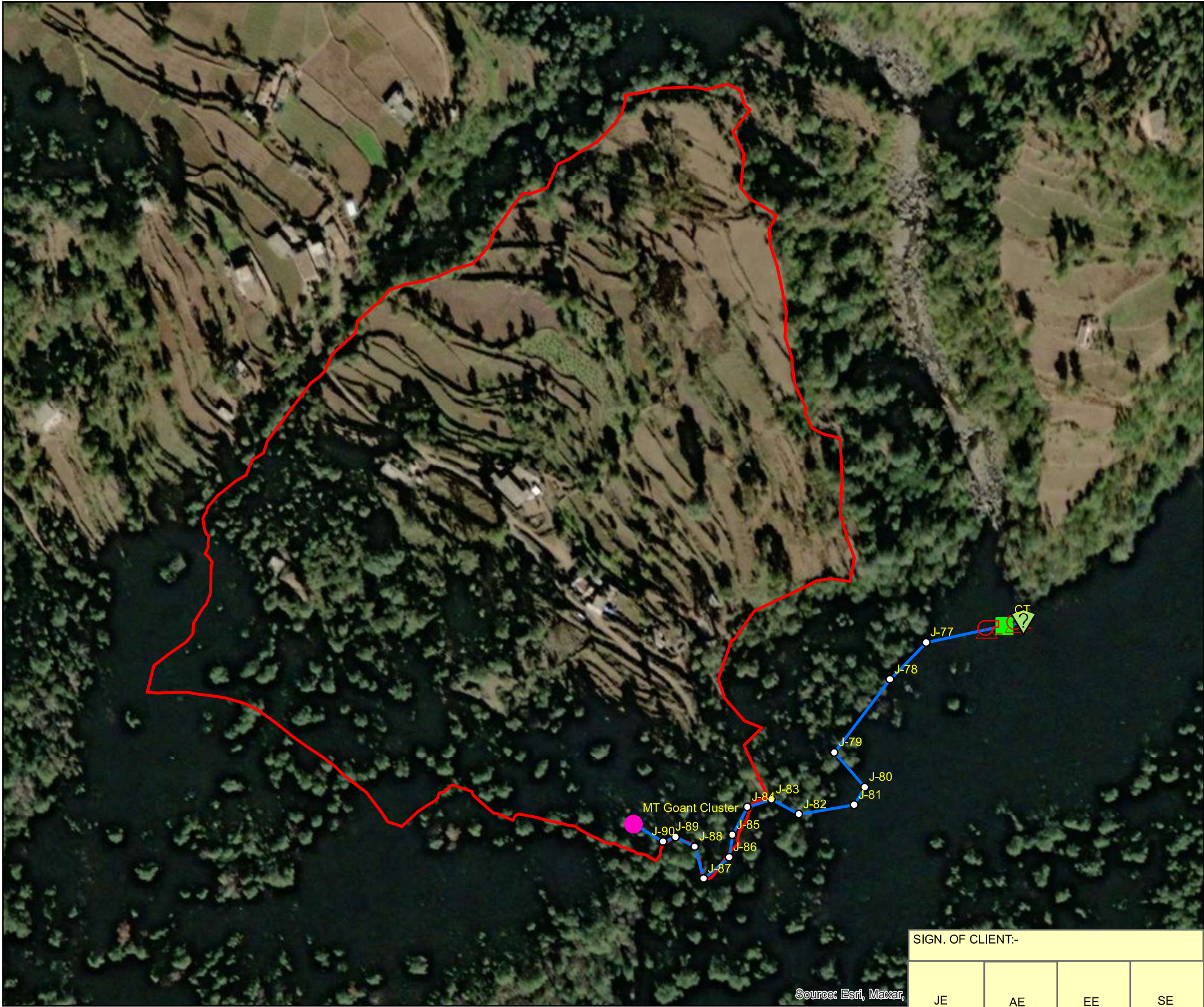
SCALE:- 1:8,000

DWG. No:-

TCE.12503A-CV -3082-WS-35205

ISSUE:-

P0



Legend

- Source
- Pump
- MT
- TANK
- Junction
- Rising Main 80mm Dia GI Pipe
- GOANT

	SIGN.												
	INITIALS												
	REVISIONS												
P0	SIGN.												24-06-2022
	INITIALS	GKJ	SKAC	DVB							MK	DK	
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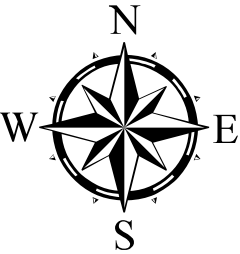
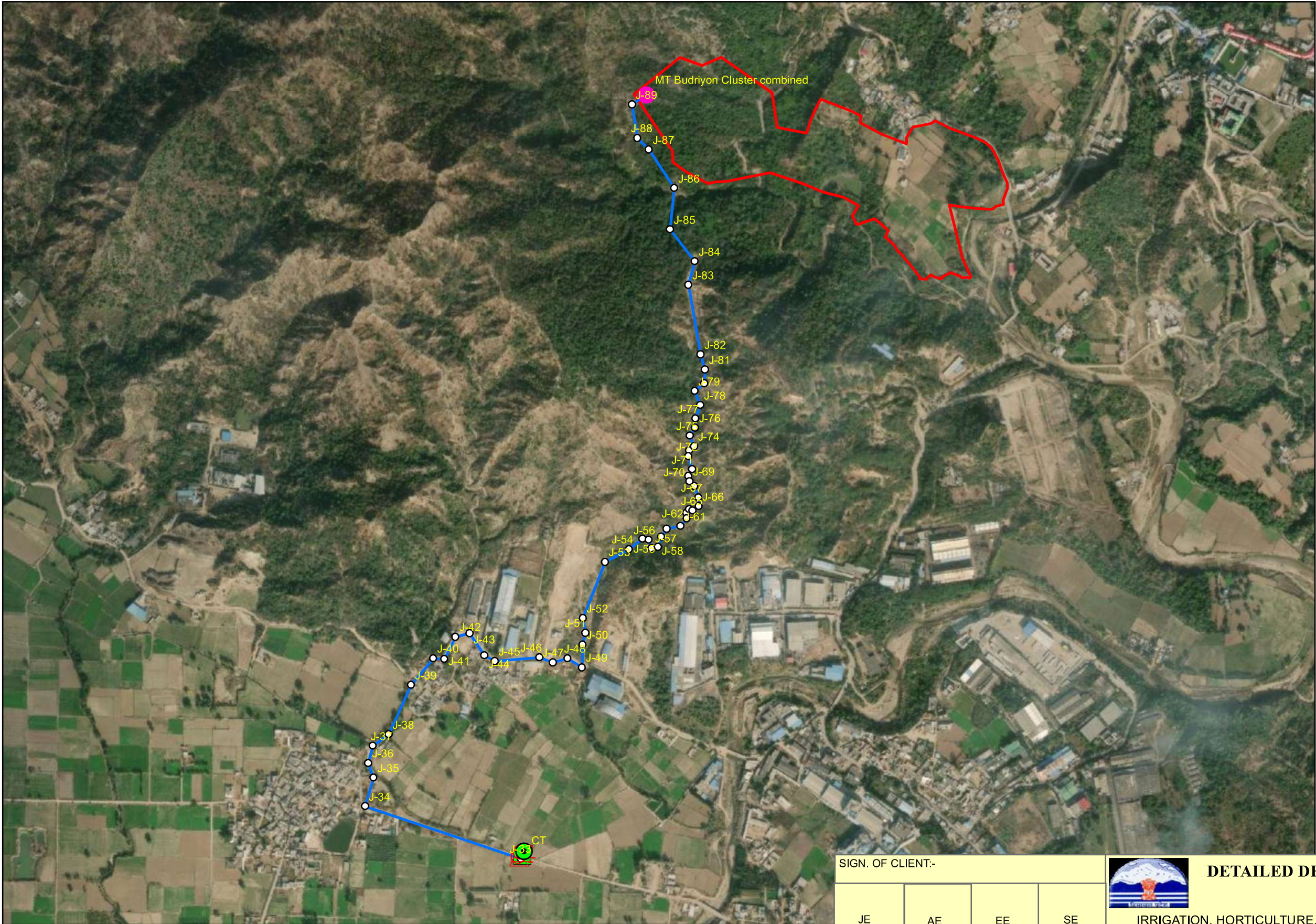
File Name: 12503A-CV-35207-Rev-P0

DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TITLE:-
NETWORK DRAWING OF LIS GOANT FOR NAHAM BLOCK, SIRMOUR DISTRICT.

TATACONSULTING ENGINEERS LIMITED. MUMBAI

SCALE:- 1:2,500	DWG. No:- TCE.12503A-CV -3082-WS-35207	ISSUE:- P0
DL.CEN:- DEL-CV		



Legend

- Tube well
- Pump
- MT
- TANK
- Junction
- Rising Main 80mm Dia GI Pipe
- BUDRIYON

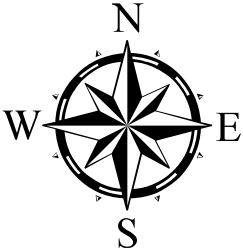
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	REVISIONS												
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	INITIALS	GKJ	SKAC	DVB							MK	DK	
	REVISIONS												
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD.	DATE
					CLEARED								

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JE	AE	EE	SE		IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT	
PURPOSE: FOR TENDER ONLY				TITLE:- NETWORK DRAWING OF LIS BUDRIYON FOR NAHAN BLOCK, SIRMOUR DISTRICT.		
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File Name: 12503A-CV-35208-Rev-P0					SCALE:- 1:10,000	DWG. No:- TCE.12503A-CV -3082-WS-35208
				DL.CEN:- DEL-CV		



Legend

Tube well

PumpCTMDTFATEHPUR

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	REVISIONS								
P0	SIGN.								
	INITIALS	GKJ	SKAC	DVB			MK	DK	24-06-2022
	REVISIONS								
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	
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SIGN. OF CLIENT:-

JE

AE

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DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

PURPOSE: FOR TENDER ONLY

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TITLE:-

NETWORK DRAWING OF LIS FATEHPUR FOR PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.

TATACONSULTING ENGINEERS LIMITED. MUMBAI

SCALE:- 1:2,000

DWG. No:-

ISSUE:-

File Name: 12503A-CV-35209-Rev-P0

DL.CEN:- DEL-CV

TCE.12503A-CV -3082-WS-35209

P0



Legend

- Source
- Pump
- MT
- TANK
- Junction
- Rising Main 100mm Dia GI Pipe
- KILLOUR

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	INITIALS								
	REVISIONS								
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	INITIALS	GKJ	SKAC	DVB			MK	DK	24-06-2022
	REVISIONS								
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	
					CLEARED			PE/PM	APPD.
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File Name: 12503A-CV-35210-Rev-P0



DETAILED DESIGN CONSULTANCY, HP-SHIVA
(PACKAGE CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TITLE:-

NETWORK DRAWING OF LIS KILLOUR FOR
PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.



TATACONSULTING ENGINEERS LIMITED.
MUMBAI

SCALE:- 1:5,000	DWG. No:-	ISSUE:-
DL.CEN.:- DEL-CV	TCE.12503A-CV -3082-WS-35210	P0



- Legend
- Tube well
- Pump
- MDT_MT
- TANK
- Junction
- Rising Main 80mm Dia GI Pipe
- UPPER_BHUDDI

	SIGN.												
	INITIALS												
	REVISIONS												
P0	SIGN.												24-06-2022
	INITIALS	GKJ	SKAC	DVB							MK	DK	
	REVISIONS												
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD.	DATE
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File Name: 12503A-CV-35211-Rev-P0

DETAILED DESIGN CONSULTANCY, HP-SHIVA
(PACKAGE CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TITLE:-

NETWORK DRAWING OF LIS UPPER BHUDDI FOR
PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.

TATACONSULTING ENGINEERS LIMITED.
MUMBAI

SCALE:- 1:4,000	DWG. No:-	ISSUE:-
DL.CEN:- DEL-CV	TCE.12503A-CV -3082-WS-35211	P0



Legend

- Check dam
- Pump
- MDT
- MT
- TANK
- Junction
- Rising Main 80mm Dia GI Pipe
- KHARA

	SIGN.								
	INITIALS								
	REVISIONS								
P0	SIGN.								
	INITIALS	GKJ	SKAC	DVB			MK	DK	24-06-2022
	REVISIONS								
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	
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File Name: 12503A-CV-35212-Rev-P0



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(PACKAGE CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

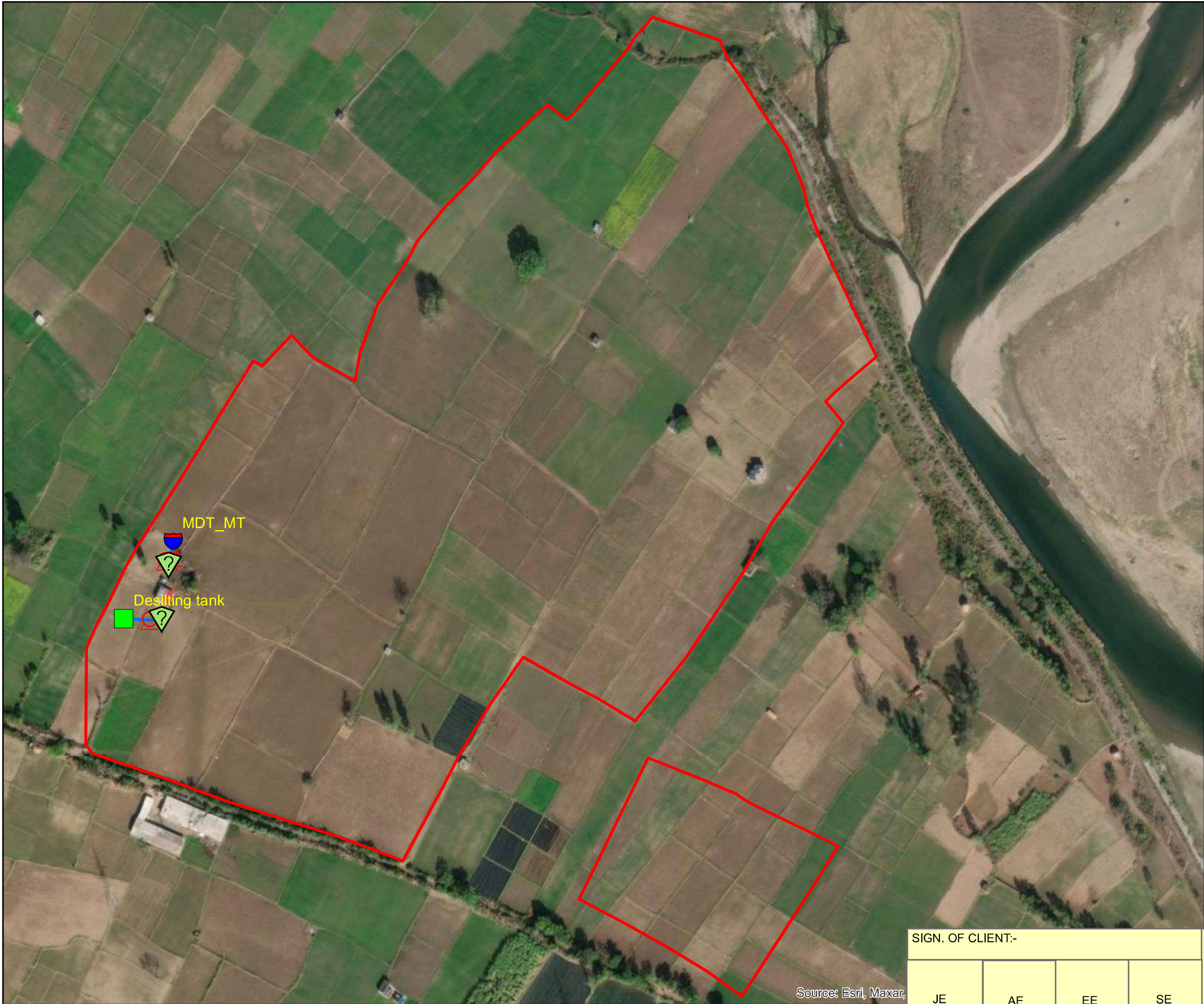
TITLE:-

NETWORK DRAWING OF LIS KHARA FOR
PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.



TATACONSULTING ENGINEERS LIMITED.
MUMBAI

SCALE:- 1:2,500	DWG. No:-	ISSUE:-
DL.CEN.:- DEL-CV	TCE.12503A-CV -3082-WS-35212	P0



- Legend**
- Source
 - Pump
 - Desilting tank
 - MDT_MT
 - pipe
 - PURUWALA

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	REVISIONS								
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	INITIALS	GKJ	SKAC	DVB			MK	DK	24-06-2022
	REVISIONS								
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	
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DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TITLE:-

NETWORK DRAWING OF LIS PURUWALA FOR PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.



TATACONSULTING ENGINEERS LIMITED. MUMBAI

SCALE:- 1:3,000	DWG. No:-	ISSUE:-
DL.CEN:- DEL-CV	TCE.12503A-CV -3082-WS-35213	P0



Legend

- Tube well
- Pmp
- MDT_MT
- TANK
- Junction
- Rising Main 80mm Dia GI Pipe
- GYANIWALA

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	INITIALS												
	REVISIONS												
P0	SIGN.												24-06-2022
	INITIALS	GKJ	SKAC	DVB							MK	DK	
	REVISIONS												
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD.	DATE
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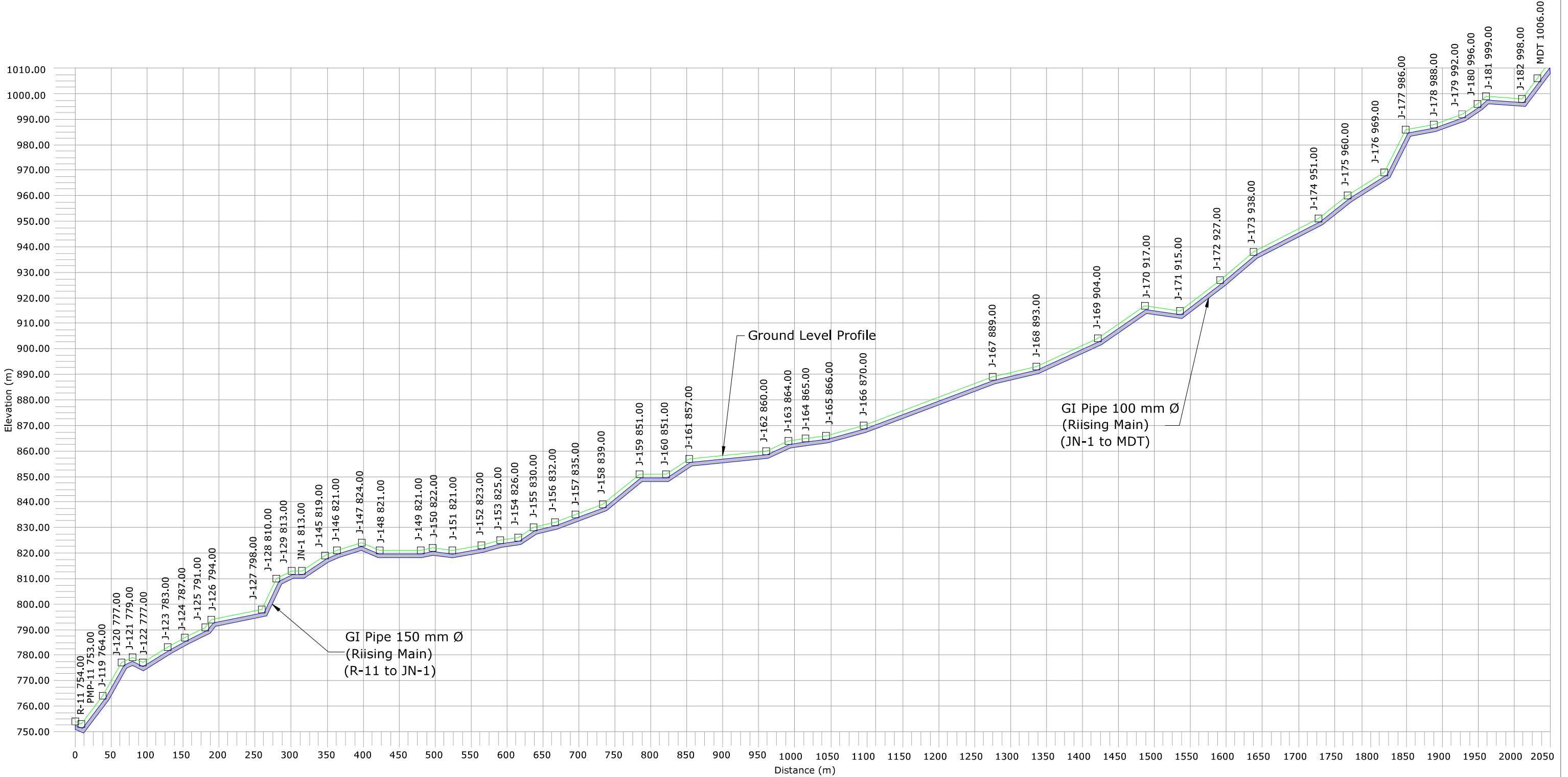
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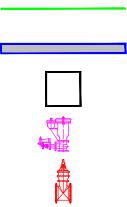
	DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)		
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT			
TITLE:- NETWORK DRAWING OF LIS GYAYANIWALA FOR PAONTA SAHIB BLOCK, SIRMOUR DISTRICT.			
	TATACONSULTING ENGINEERS LIMITED. MUMBAI		
SCALE:- 1:2,500	DWG. No:- TCE.12503A-CV -3082-WS-35214		ISSUE:- P0
DL.CEN.:- DEL-CV			

[illegible]



Legend :-

- 1. Ground Level
- 2. Rising Main
- 3. Junction
- 4. Air Valve
- 5. Scour Valve



Note:-

- 1. Air Valves are Considered to be provided at 500 m c/c and at High Points.
- 2. Scour Valves are Provided at 2000 m c/c Distance.
- 3. Above is Tentative Arrangement. Based on Actual Site Condition size, Quantity and Location of Proposed Valves May Vary.

	SIGN.															
	INITIALS															
	REVISIONS															
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	INITIALS	BSN	BLGR	DVB									MK	DK		25-06-2022
	REVISIONS															
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME					PE/PM	APPD	DATE	
															(dd-mm-yyyy)	

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FILE NAME 12503A-CV-35359-Rev-P0			



DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE-CS09)

IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

PROPOSED L-SECTION-LIS KHERICHANDAN

NAHAN BLOCK, SIRMOUR DISTRICT

(SHEET 2 OF 3)



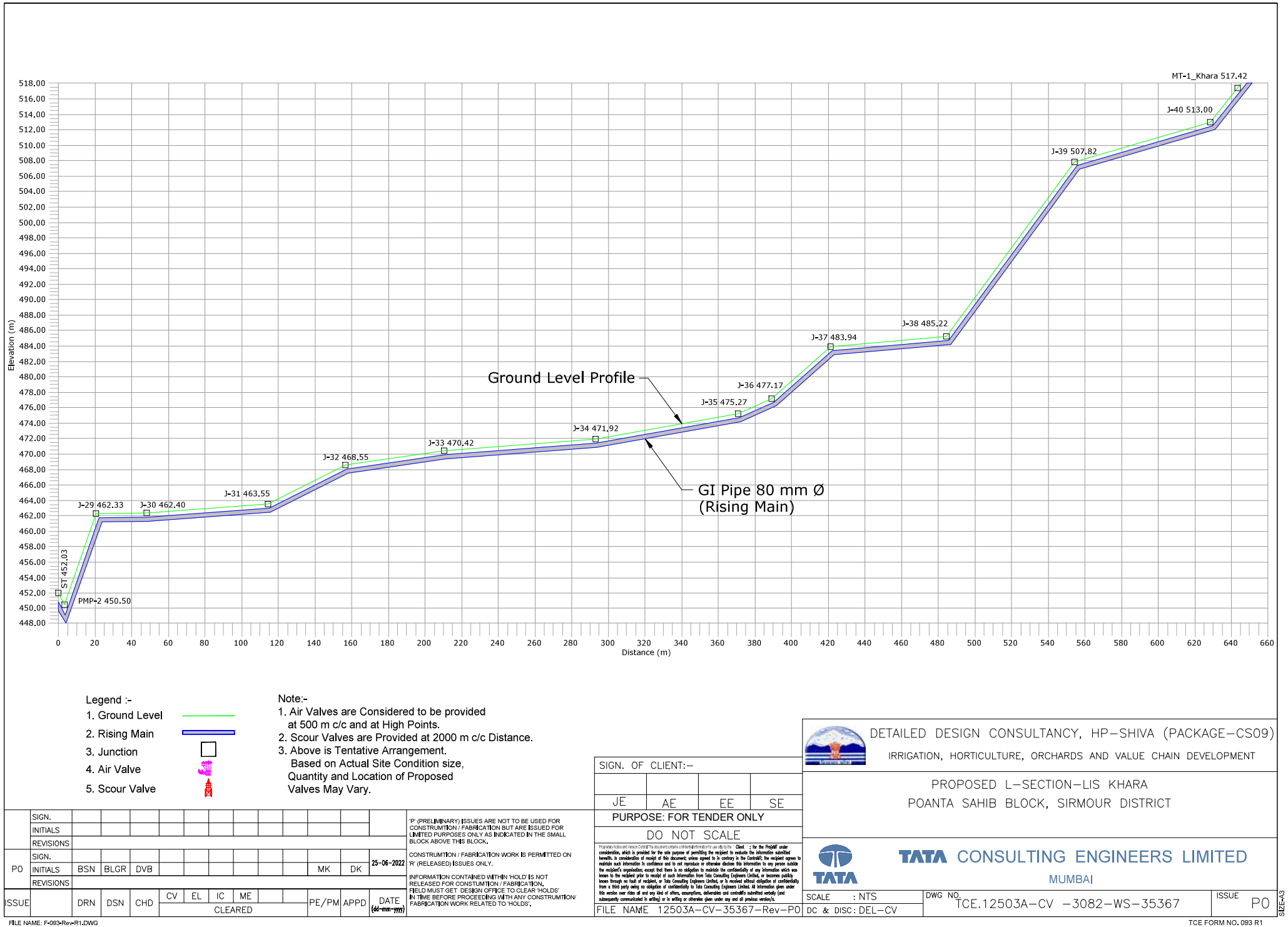
TATA CONSULTING ENGINEERS LIMITED

MUMBAI

SCALE : NTS

DWG NO. TCE.12503A-CV -3082-WS-35359

ISSUE P0



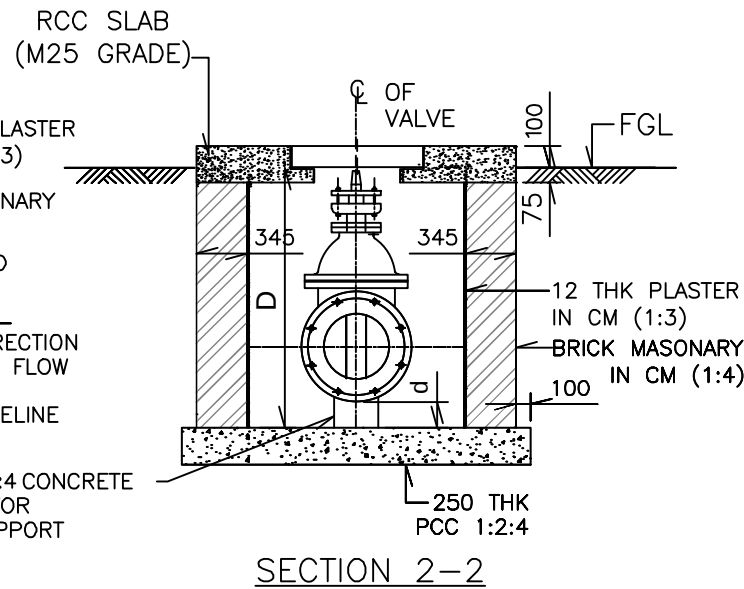
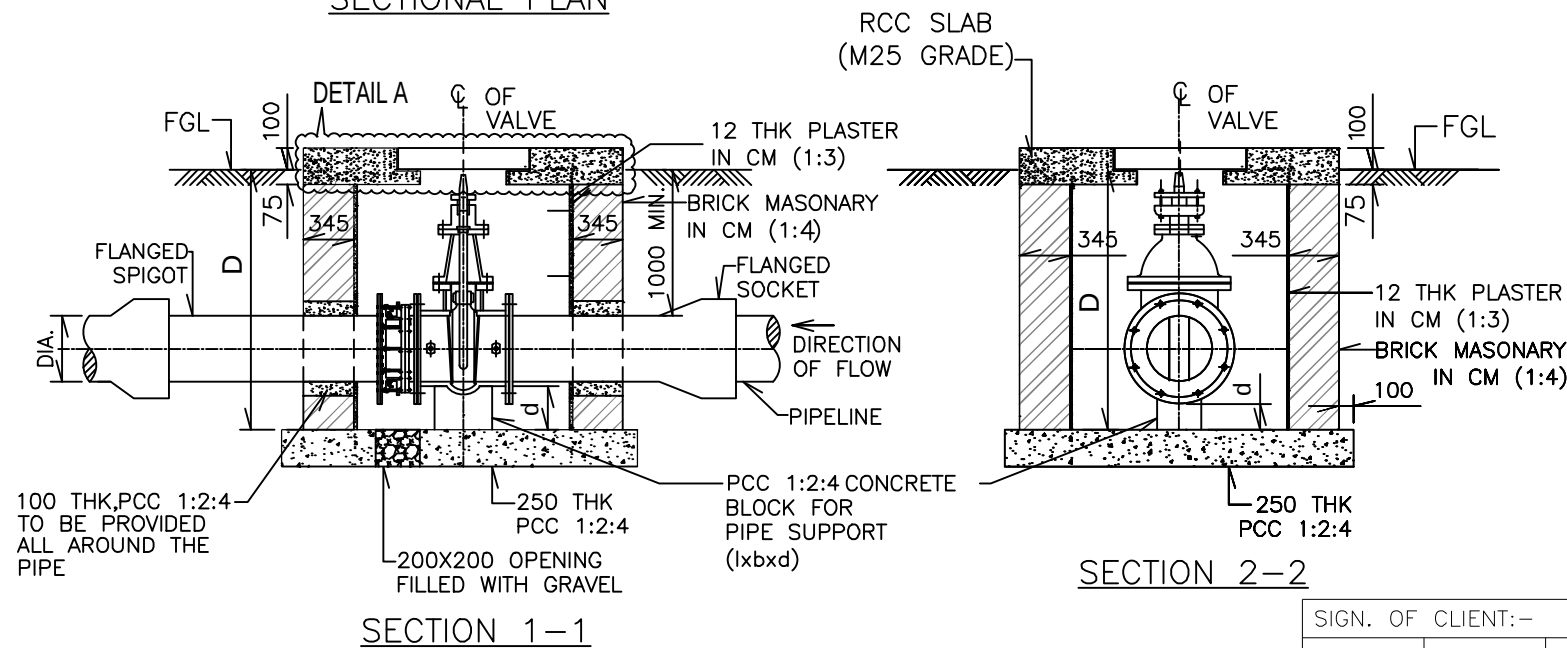
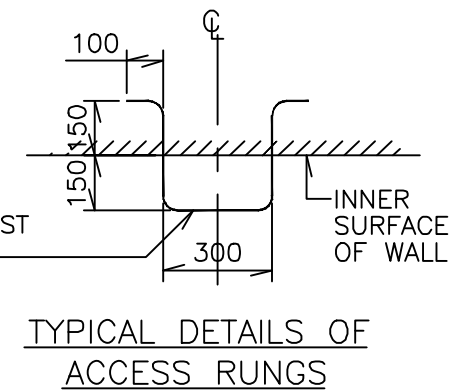
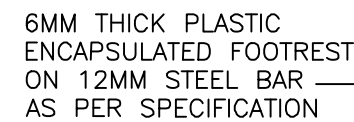
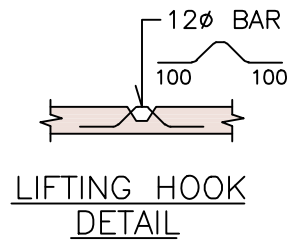
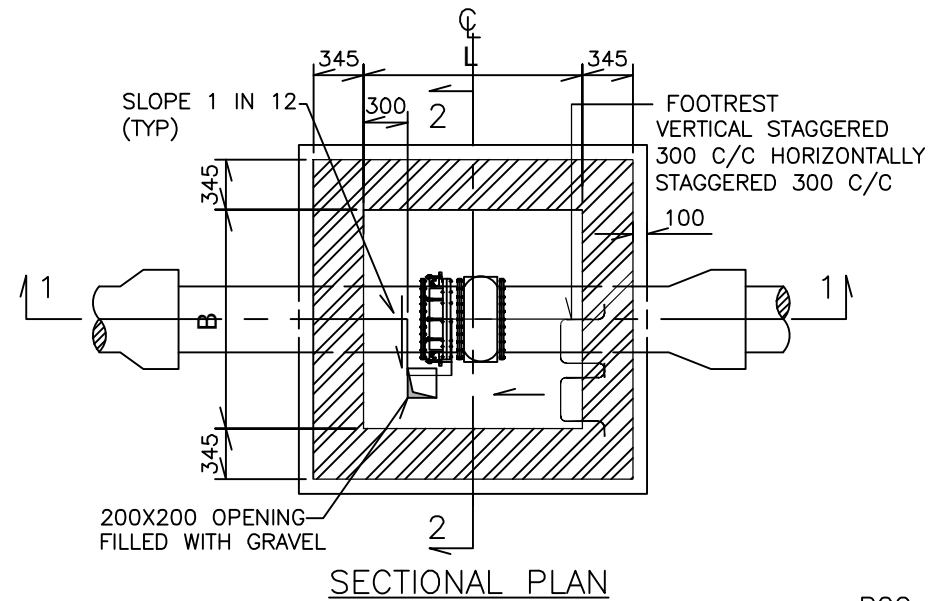
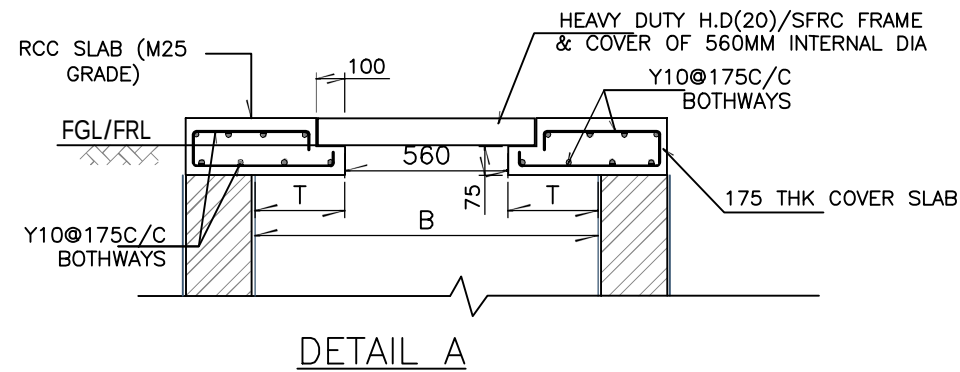
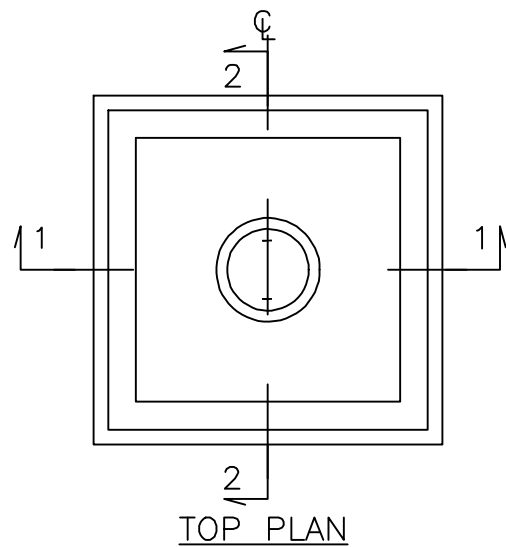


TABLE:

DIA. OF PIPE	CHAMBER SIZE			PEDESTAL		
	L	B	D	l	b	d (Min)
300	1200	1200	1600	150	250	100
200	1200	1200	1600	100	200	100
150	900	900	1600	100	150	100

LEGEND

TYP	---	TYPICAL
DIA	---	DIAMETER
UN	---	UNLESS NOTED
MS	---	MILD STEEL
DI	---	DUCTILE IRON
THK	---	THICK
CL	---	CENTER LINE
IL	---	INVERT LEVEL
PCC	---	PLAIN CEMENT CONCRETE
RCC	---	REINFORCED CONCRETE
EQ.	---	EQUAL

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS IN METRE UNLESS NOTED.
2. GRADE OF PCC SHALL BE M15 WITH MAXIMUM 40mm DOWN GRADED AGGREGATES CONFORMING TO SPECIFICATION.
3. REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED BARS TO GRADE Fe500 CONFORMING TO IS:1786 (LATEST ISSUE).
4. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS.
RC COVER—20mm TOP & BOTTOM
5. SAFE BEARING CAPACITY OF SOIL IS CONSIDERED AS 15 T/Sqm. AT FOUNDING LEVEL.
6. THE ARRANGEMENT RELATED TO VALVE AND FITTINGS SHOWN IN THE DRAWING ARE INDICATIVE ONLY. BEFORE CONSTRUCTION, ARRANGEMENT OF VALVE AND FITTINGS SHALL BE PROVIDED BY THE CONTRACTOR TO ENGINEER FOR APPROVAL.
7. BRICK MASONRY SHALL BE IN CM (1:4).
8. BRICKS SHALL BE OF MINIMUM 75 Kg/cm² COMPRESSIVE STRENGTH.
9. THE TYPICAL DETAILS OF CHAMBER ARE APPLICABLE FOR 150mm TO 600mm DIA PIPELINE.
10. VALVE CHAMBERS SHALL BE CONSTRUCTED IN RCC IN CASE HIGH WATER TABLE AND SPACE CONSTRAINT.
11. THE FOOTREST SHALL BE PROVIDED FROM TOP COVER TO PIPE BARREL TOP AND THEN PIPE BARREL TOP UPTO 300mm ABOVE CHAMBER BOTTOM.
12. VALVE SPINDLE EXTENSIONS TO BE FITTED TO BRING TOP OF VALVE SPINDLE TO WITHIN 100mm TO UNDERSIDE OF RC COVER.



DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TYPICAL SLUICE VALVE CHAMBER DETAILS



TATA CONSULTING ENGINEERS LIMITED
MUMBAI

MUMBAI

SCALE	: NTS
DC & DISC	: DEL

DWG NO.

NO. TCE.12503A-CV-3082-WS-30581

SSUE	P0
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SIZE-A3

TCE FORM NO. 093 R1

	SIGN.												
	INITIALS												
	REVISIONS												
PO	SIGN.												
	INITIALS	SM	MJ	DVP							NMS	NMS	15-04-2022
	REVISIONS												
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD	DATE
					CLEARED								

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SIGN. OF CLIENT:-

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PURPOSE : FOR TENDER ONLY	
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FILE NAME	12503A-CV-30581-Rev-P0
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FILE NAME: F-093-Rev-R1.DWG

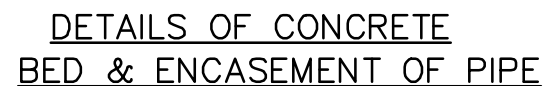


TABLE										
INTERNAL DIAMETER OF PIPE (mm)	ANGLE OF BEND	DESIGN PRESSURE (kg/m ²)	SOIL COVER OVER PIPE Ds (mm)	H (m)	L1 (m)	L2 (m)	L3 (m)	L (m)	B1 (m)	B2 (m)
100	90°	4.35	1000	0.70	0.75	0.40	0.35	0.77	0.70	0.35
100	45°	4.35	1000	0.60	0.55	0.30	0.25	0.57	0.60	0.30
100	22.5°	4.35	1000	0.45	0.45	0.25	0.20	0.46	0.50	0.25
100	90°	4.85	1000	0.70	0.80	0.45	0.35	0.82	0.70	0.35
100	45°	4.85	1000	0.60	0.55	0.30	0.25	0.57	0.60	0.30
100	22.5°	4.85	1000	0.50	0.45	0.25	0.20	0.47	0.50	0.25
100	90°	5.93	1000	0.80	0.75	0.40	0.35	0.78	0.80	0.40
100	45°	5.93	1000	0.65	0.65	0.35	0.30	0.67	0.70	0.35
100	22.5°	5.93	1000	0.50	0.55	0.30	0.25	0.56	0.50	0.25
150	90°	3.33	1000	0.85	0.85	0.45	0.40	0.88	0.90	0.45
150	45°	3.33	1000	0.70	0.70	0.40	0.30	0.72	0.70	0.35
150	22.5°	3.33	1000	0.55	0.55	0.30	0.25	0.57	0.50	0.25
250	90°	3.75	1000	1.25	1.25	0.70	0.55	1.29	1.30	0.65
250	45°	3.75	1000	1.00	1.05	0.60	0.45	1.08	1.00	0.50
250	22.5°	3.75	1000	0.80	0.80	0.45	0.35	0.82	0.80	0.40
250	90°	6.03	1000	1.45	1.45	0.80	0.65	1.49	1.50	0.75
250	45°	6.03	1000	1.15	1.25	0.70	0.55	1.28	1.10	0.55
250	22.5°	6.03	1000	0.95	0.90	0.50	0.40	0.93	0.90	0.45
350	90°	5.93	1000	1.80	1.80	1.00	0.80	1.86	1.80	0.90
350	45°	5.93	1000	1.45	1.55	0.85	0.70	1.59	1.50	0.75
350	22.5°	5.93	1000	1.20	1.15	0.65	0.50	1.19	1.20	0.60
500	90°	4.68	1000	2.15	2.05	1.15	0.90	2.12	2.20	1.10
500	45°	4.68	1000	1.70	1.80	1.00	0.80	1.85	1.70	0.85
500	22.5°	4.68	1000	1.40	1.35	0.75	0.60	1.39	1.40	0.70

LEGEND:

DIA	_____	DIAMETER
B	_____	BREADTH
L	_____	LENGTH
H	_____	HEIGHT
mm	_____	MILLIMETERS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES UNLESS NOTED.
2. INVERT LEVEL OF PIPES SHALL BE AS PER RELEVANT NETWORK DRAWINGS.
3. NO CONCRETE SHALL BE PLACED AROUND JOINTS OF PIPELINE, UNTIL THAT LENGTH OF PIPE HAS PASSED SECTIONAL HYDRAULIC TEST.
4. STEEL FOR REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe 500
5. REINFORCEMENT LAP LENGTHS SHALL BE 50xDIAMETER OF SMALLER BAR.
6. CONCRETE TO BE USED SHALL BE OF GRADE M20 WITH 20mm DOWN GRADED AGGREGATES CONFORMING TO SPECIFICATIONS.
7. CLEAR COVER TO REINFORCEMENT
BOTTOM AND SIDES – 30mm
8. DURING CONSTRUCTION, IF GROUND WATER TABLE IS MET WITH, IT SHALL BE BROUGHT TO THE NOTICE OF ENGINEER FOR MAKING NECESSARY CHANGES IN THE DESIGN.
9. SOIL BENEATH AND BY THE SIDE OF THE THRUST BLOCK, WHICH ULTIMATELY BEARS THRUST THROUGH CONCRETE MEDIUM, MUST REMAIN UNDISTURBED. IN CASE ANY EXTRA EXCAVATION IS DONE IN TRENCHES, WHERE THE THRUST BLOCK IS TO BE PROVIDED, THE SAME SHALL BE FILLED WITH 1:4:8 CONCRETE
10. PIPES AND SPECIALS SHALL BE SUITABLY SUPPORTED WHILE CONCRETING THE THRUST BLOCK AS DIRECTED BY ENGINEER.
11. TESTING OF MAINS SHALL BE DONE AFTER CASTING OF THRUST BLOCKS AND COMPACTION OF BACKFILLING.
12. AT THE TIME OF TESTING, COMPACTED SOIL SHALL BE PLACED ON THE THRUST BLOCK UP TO THE ROAD LEVEL.
13. THRUST BLOCKS NEED TO BE PLACED AS PER SITE CONDITION

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	INITIALS	SM	MJ	DVP							NMS	NMS	
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ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD	DATE
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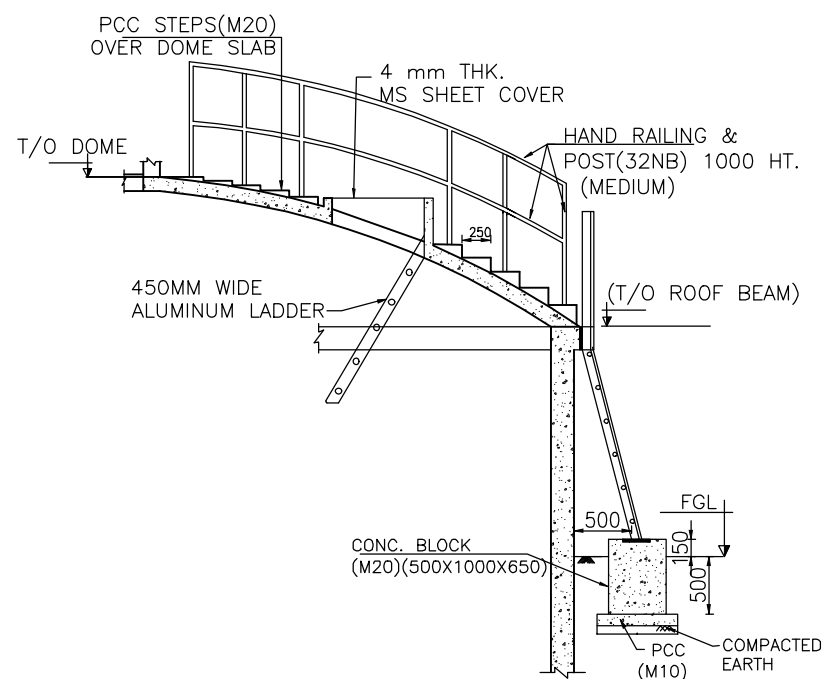
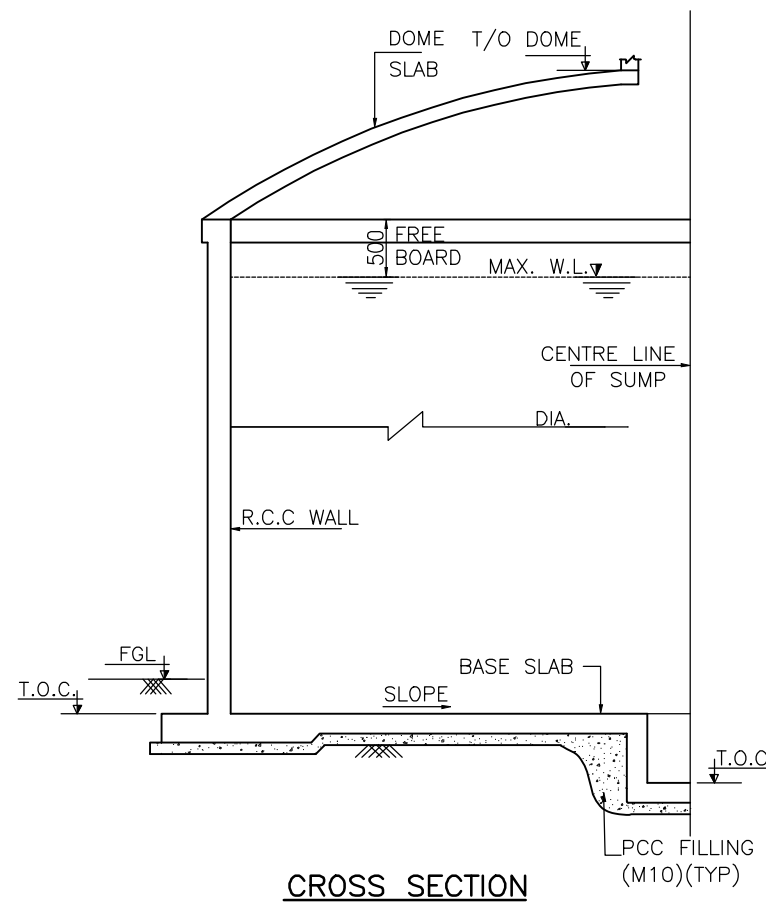
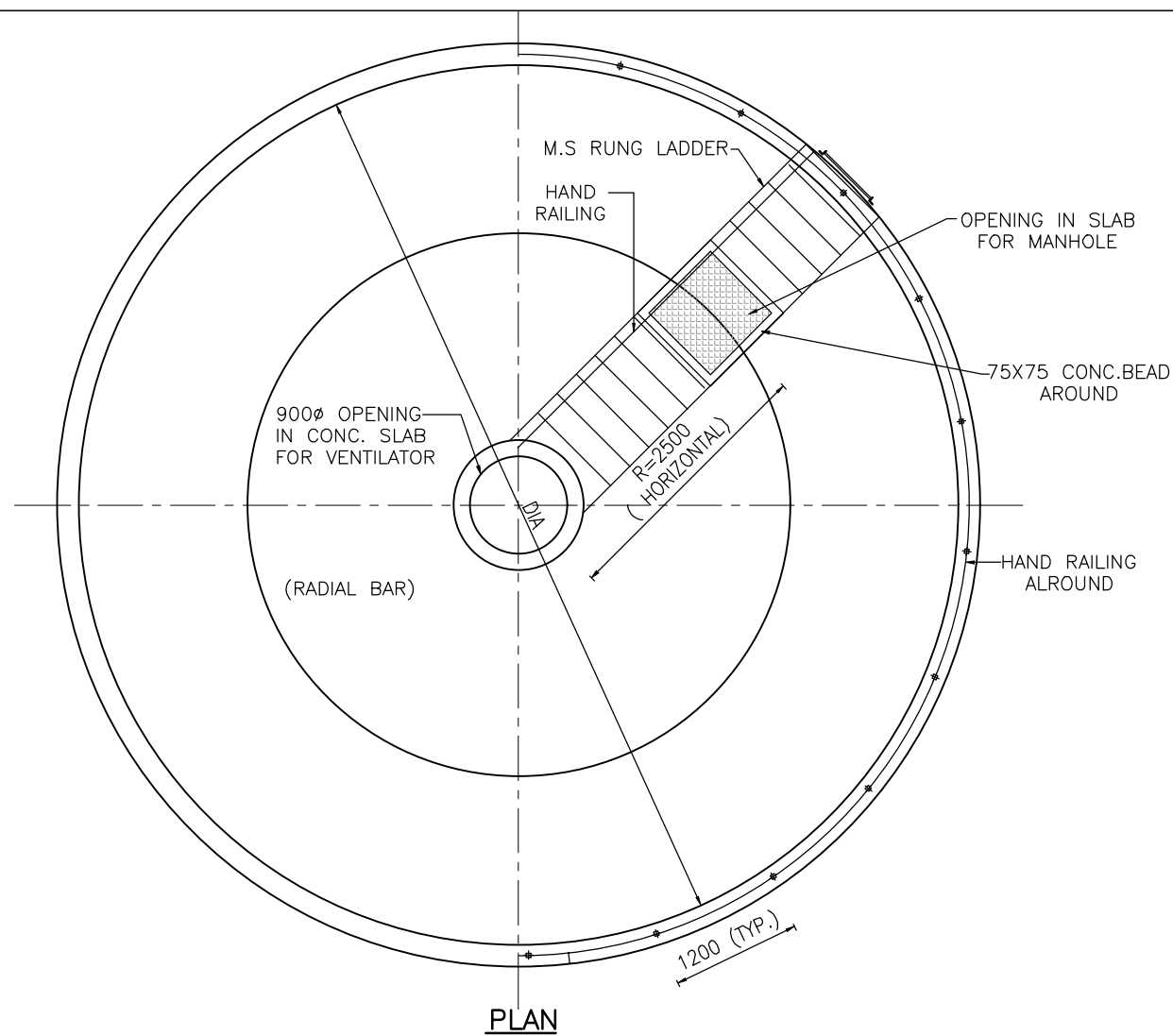
DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TYPICAL DETAILS OF THRUST BLOCK



TATA CONSULTING ENGINEERS LIMITED
MUMBAI

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DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09)
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TYPICAL GLSR DETAILS
(1,00,000,1,50,000, 2,00,000, 2,50,000 LITRE CAPACITY)

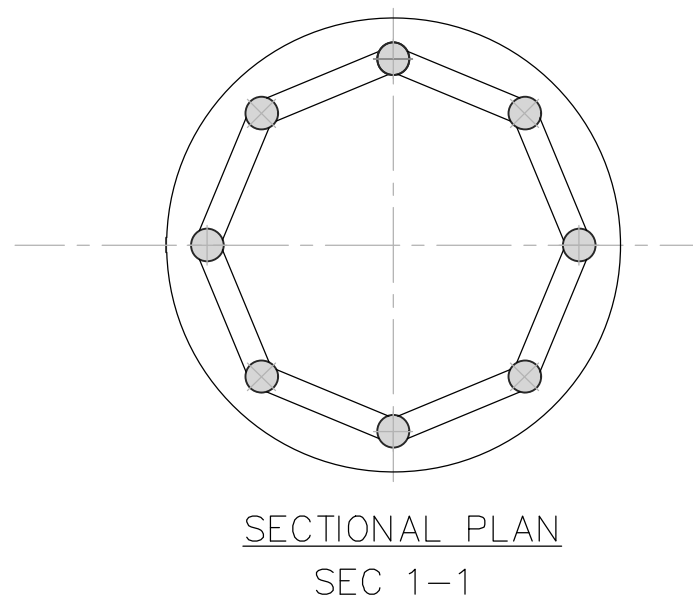


TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE	: NTS
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DWG NO.	TCE.12503A-CV-3082-GA-30584
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ISSUE	P0
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1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES UNLESS NOTED.
2. DO NOT SCALE THE DRAWING. FOLLOW FIGURED DIMENSIONS ONLY.
3. GRADE OF CONCRETE SHALL BE M30 WITH MAXIMUM 20mm DOWNGRADED AGGREGATES CONFORMING TO IS 456.
4. STEEL FOR REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE-500 CONFORMING TO IS:1786.
5. SAFE BEARING CAPACITY OF SOIL IS TAKEN AS 10T/Sq.m. AT FOUNDING LEVEL AND SAME IS TO BE CONFIRMED AT SITE BEFORE EXECUTION.
6. PLAIN CEMENT CONCRETE UNDER FOUNDATION SHALL BE OF GRADE M10 CONFORMING TO IS 456.
7. IF ANY LOOSE SOIL IS ENCOUNTERED AT FOUNDING LEVEL DURING CONSTRUCTION, IT SHOULD BE BROUGHT TO THE NOTICE OF THE ENGINEER.
8. IF GROUND WATER TABLE IS ENCOUNTERED DURING CONSTRUCTION, IT SHOULD BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR MAKING APPROPRIATE CHANGES IN THE DESIGN.
9. THE SPACING OF CONSTRUCTION JOINT SHALL NOT BE MORE THAN 1.20M.

P1	SIGN.													
	INITIALS	SM	LD/AD	DVP								NMS	NMS	27-05-2022
	REVISIONS	AS PER CLIENT OBSERVATION												
P0	SIGN.													
	INITIALS	SM	LD/AD	DVP								NMS	NMS	15-04-2022
	REVISIONS													
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD	DATE (dd-mm-yyyy)	
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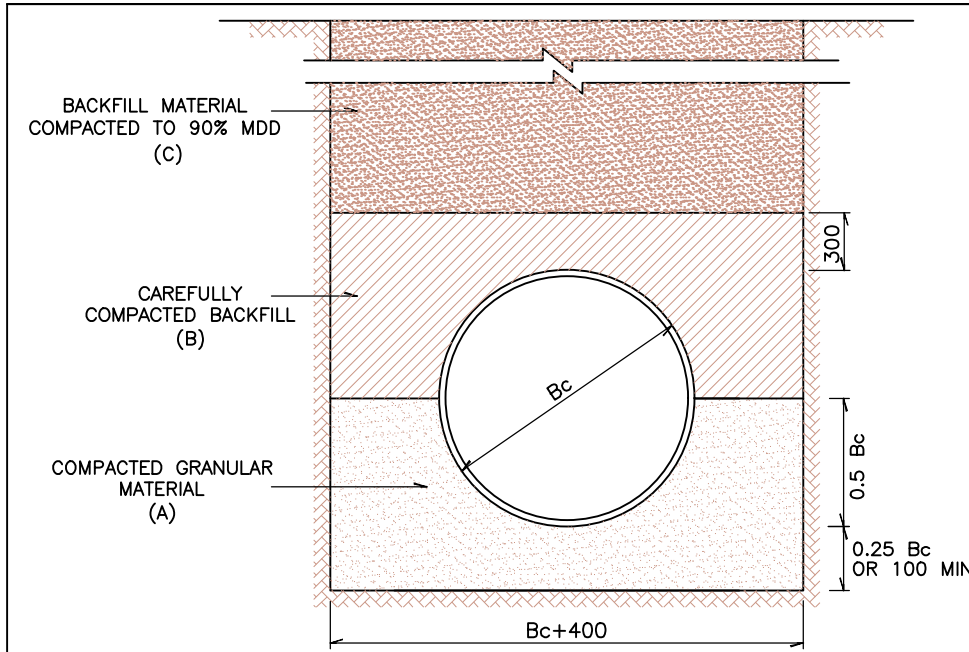
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3 LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL
4 BLOCK ABOVE THIS BLOCK.

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6 CONSTRUCTION / FABRICATION WORK IS PERMITTED ON
7 'R' (RELEASED) ISSUES ONLY.

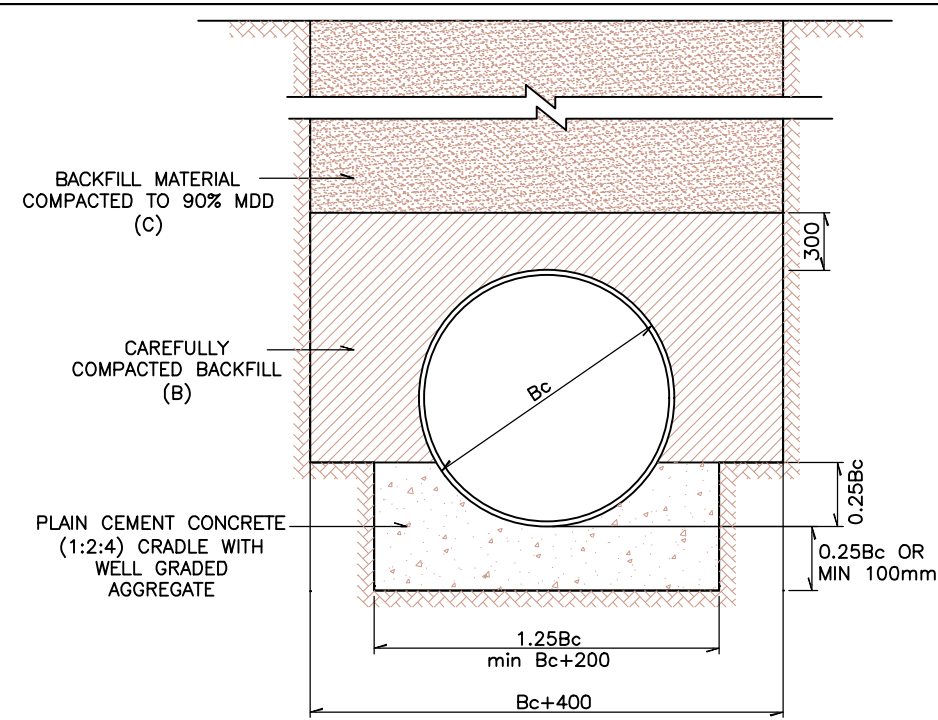
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9 INFORMATION CONTAINED WITHIN 'HOLD' IS NOT
10 RELEASED FOR CONSTRUCTION / FABRICATION
11 HOLD MUST GET DESIGN OFFICE TO CLEAR. 'HOLDS'
12 IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/
13 FABRICATION WORK RELATED TO 'HOLDS'.

FILE NAME 12503A-CV-30587-Rev-P1

ISSUE P1



GRANULAR BEDDING (GRB)
CLASS-B



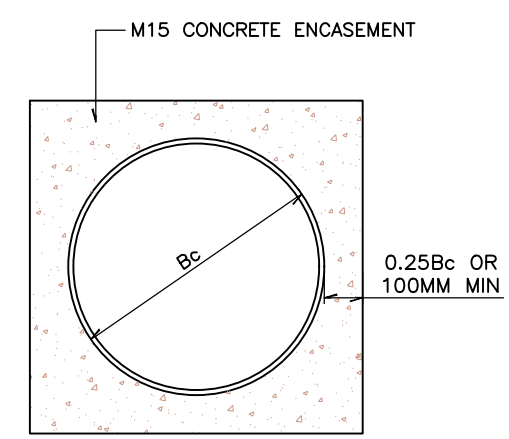
PLAIN CEMENT CONCRETE BEDDING (PCCB)
CLASS-Ab

LEGEND:

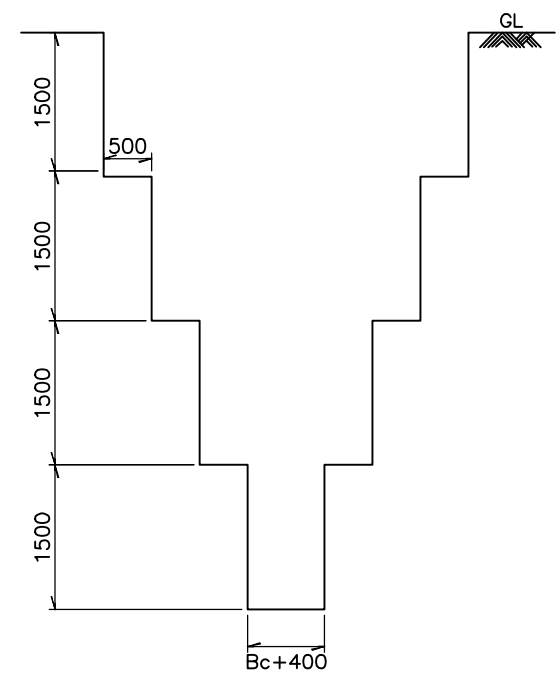
- GL GROUND LEVEL
- C.M. CEMENT MORTAR
- TYP TYPICAL
- MAX MAXIMUM
- DIA DIAMETER
- THK THICK
- MS MILD STEEL
- Bc OUTER DIAMETER OF PIPE
- d INTERNAL DIAMETER OF PIPE

NOTES:

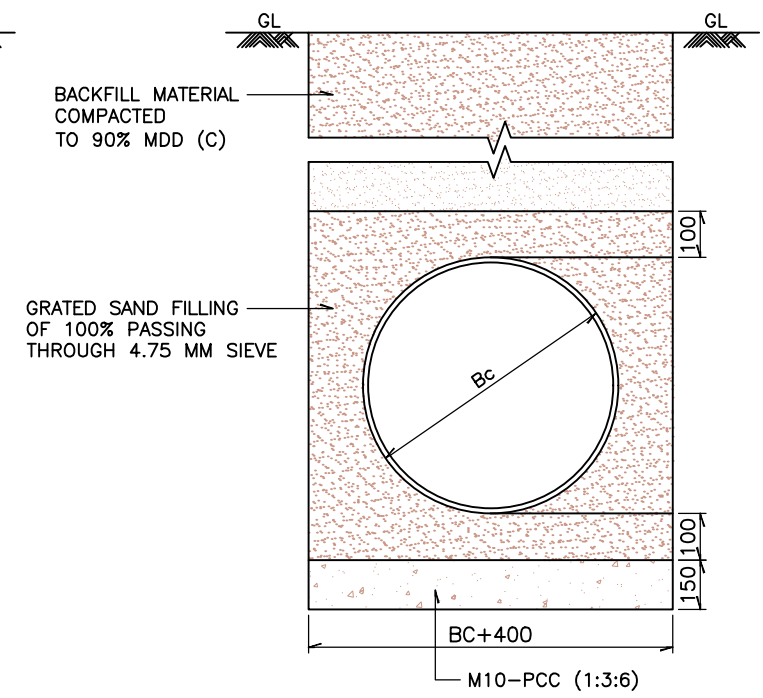
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. INTERNAL DIAMETER OF PIPE = D
3. OUTER DIAMETER OF PIPE = Bc.
4. BACKFILLING WITH APPROVED SELECTED EXCAVATED MATERIAL AND COMPACTION SHALL BE DONE BY HAND OR APPROVED MECHANICAL METHODS IN LAYERS OF 150mm WITH SPECIAL CARE TO AVOID DAMAGE OF THE PIPE
5. BACKFILLING SHALL BE DONE WITH EXCAVATED MATERIAL BY HAND OR APPROVED MECHANICAL METHODS IN LAYERS NOT EXCEEDING 150 MM THICKNESS AFTER COMPACTION, WETTED AND COMPACTIONED TO A DENSITY OF NOT LESS THAN 90% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OF THE SURROUNDING MATERIAL.
6. LAYER A. COMPACTED GRANULAR MATERIAL
7. LAYER B. CAREFULLY COMPACTED BACKFILL
8. LAYER C. BACKFILL MATERIAL COMPACTED TO 90% M.D.D



CONCRETE ENCASEMENT



TYPICAL SECTION OF TRENCH



SAND BEDDING (SB) CLASS-S

SIGN.										
PO										
ISSUE										

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JE	AE	EE	SE
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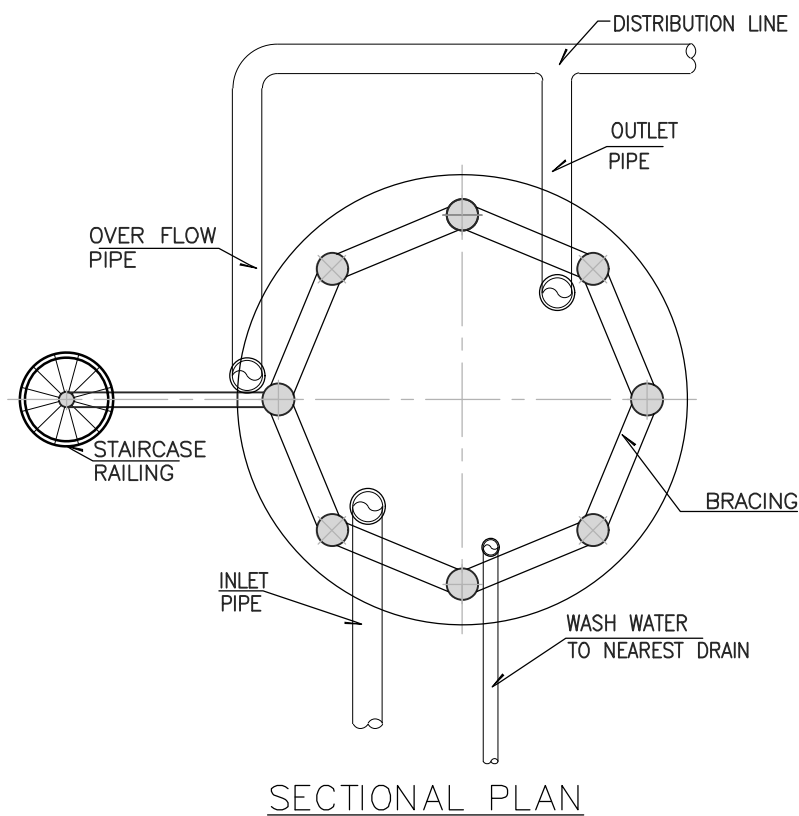
IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT

TYPICAL DETAILS OF BEDDING AND TRENCH

TATA CONSULTING ENGINEERS LIMITED

MUMBAI

SCALE : NTS	DWG NO. TCE.12503A-CV-3082-WS-30588	ISSUE PO
DC & DISC: DEL-CV		



1. ALL DIMENSIONS ARE IN MILLIMETRES. ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS.

SECTIONAL PLAN

			DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09) IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT		
TYPICAL DETAILS OF ELSR					
			TATA CONSULTING ENGINEERS LIMITED MUMBAI		
SCALE : NTS		DWG NO.		ISSUE	
DC & DISC : DEL-CV		TCE.12503A-CV-3082-GA-30591		PO	

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CC-----CEMENT CONCRETE
RCC-----REINFORCED CEMENT CONCRETE
LVL-----LEVEL
GL-----GROUND LEVEL
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1. ALL DIMENSIONS AND ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS.



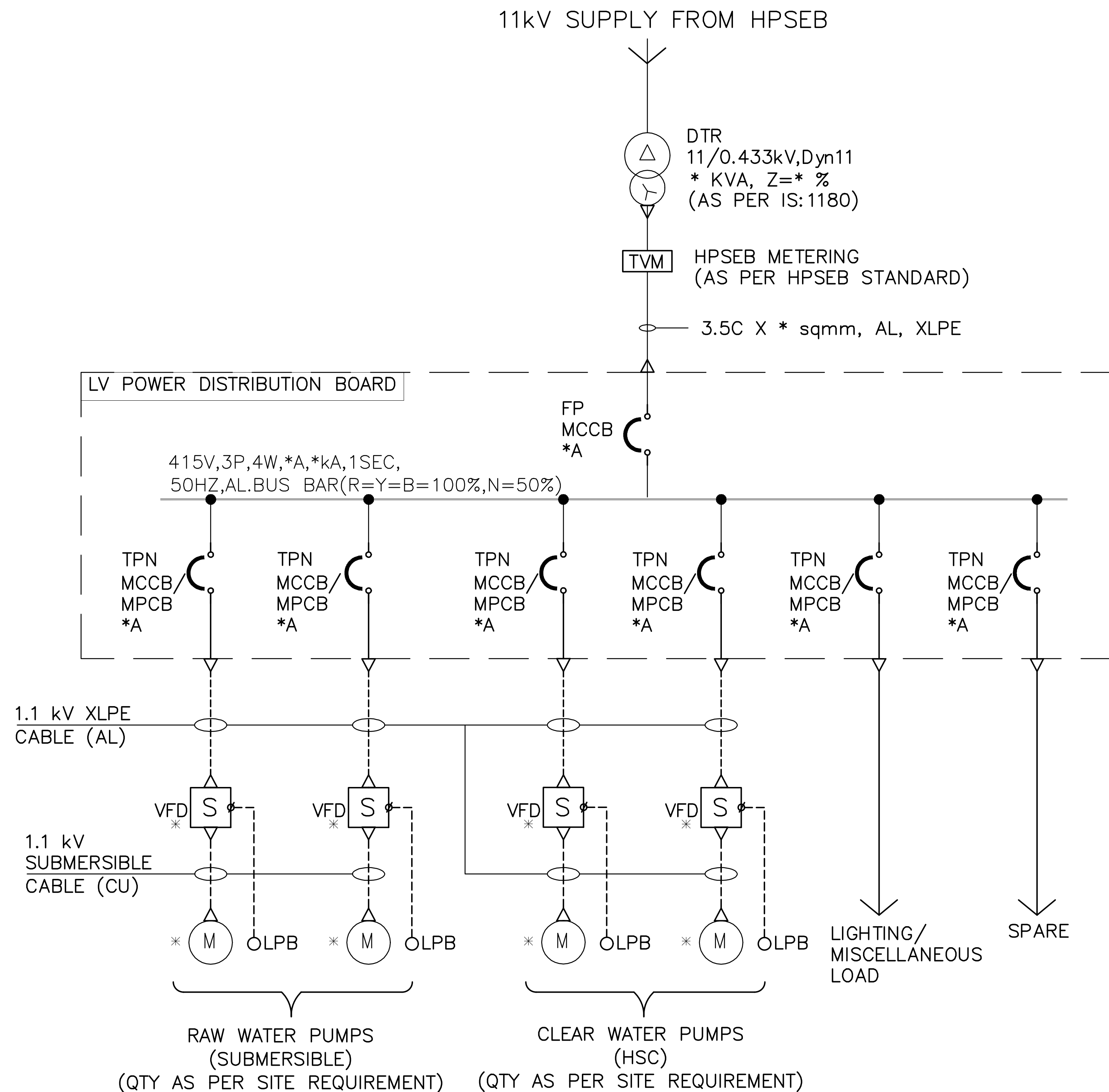
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DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09) IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT			
TYPICAL DETAILS OF PERCOLATION WELL			
 TATA CONSULTING ENGINEERS LIMITED MUMBAI			
SCALE : NTS	DWG NO. TCE.12503A-CV-3082-GA-30592		ISSUE PO



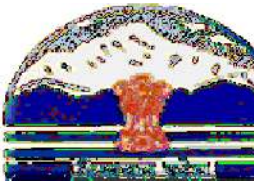
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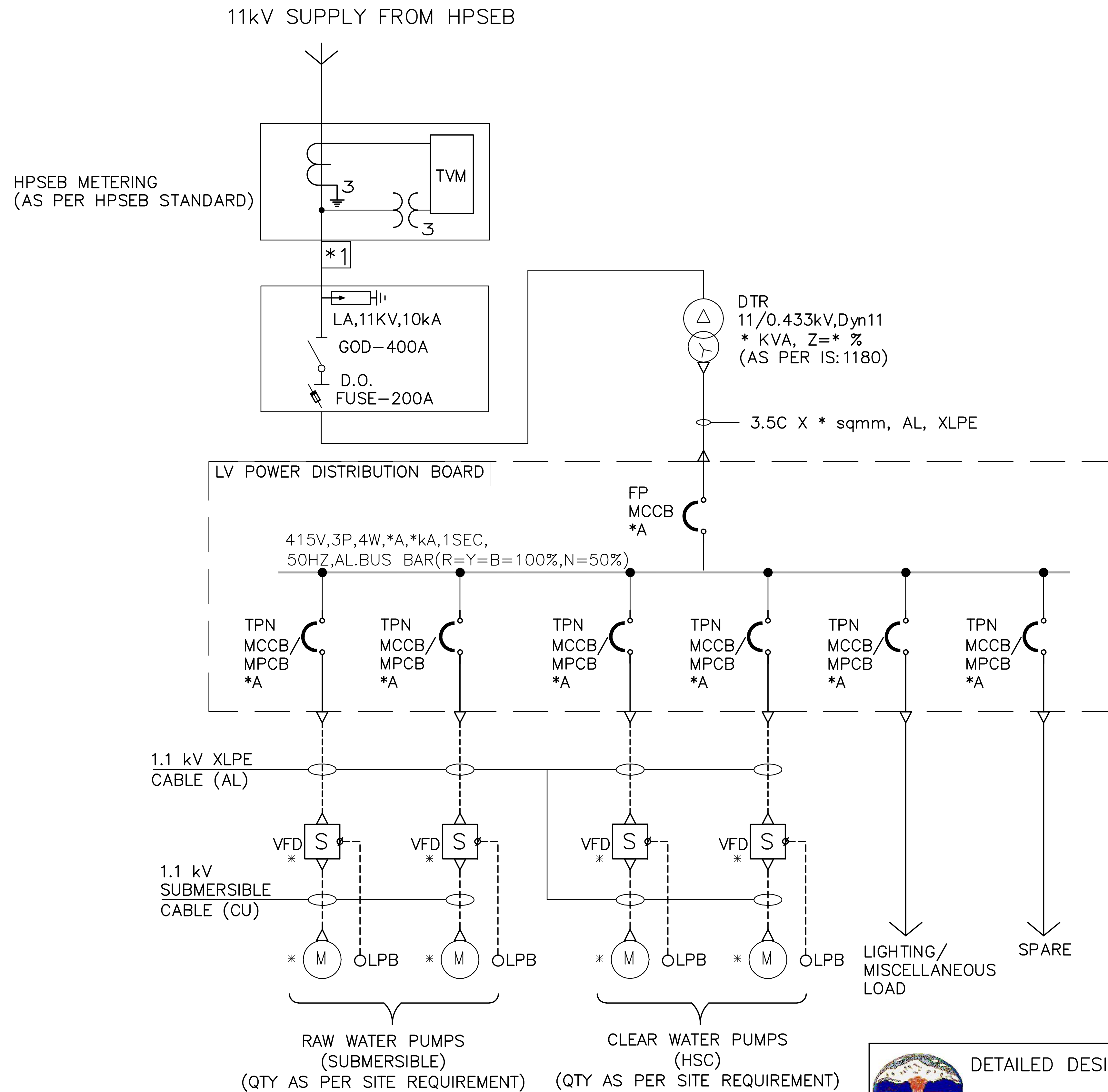
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FILE NAME: 12503A-EL-40001-Rev-P0			

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	TYPICAL SLD FOR LIS PUMPING STATION WITH 1W+1S UNITS & LT METERING	
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SCALE : NTS DC & DISC: DEL-CV	DWG NO. TCE.12503A-EL-4002-AU-40001	ISSUE P0



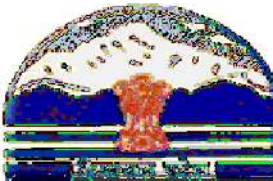
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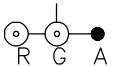
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	DETAILED DESIGN CONSULTANCY, HP-SHIVA (PACKAGE CS09) IRRIGATION, HORTICULTURE, ORCHARDS AND VALUE CHAIN DEVELOPMENT	
	TYPICAL SLD FOR LIS PUMPING STATION WITH 1W+1S UNITS & HT METERING	
TATA CONSULTING ENGINEERS LIMITED MUMBAI		
SCALE : NTS DC & DISC: DEL-CV	DWG NO. TCE.12503A-EL-4002-AU-40002	ISSUE P0

1. THIS SLD SHOWS THE SCHEME FOR DISTRIBUTION OF THE POWER WITHIN THE PROJECT BATTERY LIMIT & SHALL be READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRGS. RATINGS, SIZES & QUANTITIES OF EQUIPMENTS MARKED AS '*' NEED TO BE CALCULATED / PROVIDED BASED ON SYSTEM REQUIREMENT AS TENDER SPECIFICATIONS. CONTRACTOR SHALL SUBMIT THE EQUIPMENT SIZING CALCULATIONS & CORRESPONDING SWITCH GEAR RATING ALONG WITH THE BID.
2. THE CONTRACTOR HAS TO DO DETAIL ENGINEERING OF HV & LV SYSTEM AND WORK OUT THE RATING OF EACH COMPONENT AS PER DESIGN CRITERIA GIVEN IN TENDER & EQUIPMENT SIZING CALCULATIONS AS APPROVED BY ENGINEER-IN -CHARGE.
3. HV SYSTEM:
 - a) INTER TRIPPING & CLOSING INTERLOCK SHALL BE PROVIDED BETWEEN TRANSFORMER FEEDER (11KV) AND LT PANEL INCOMER (0.415KV) SIDE.
 - b) CT /PT UNIT FOR HT METERING AND TVM SHALL BE AS PER DISCOM.
4. LV SYSTEM:
 - a) ACB
 - 415V SWITCHBOARD INCOMER/ BUS COUPLER ACB SHALL BE FP, EDO TYPE WITH MICROPROCESSOR-BASED O/C, S/C & INBUILT E/F AND UV RELEASES.
 - ALL OUTGOING ACBS SHALL BE TP, EDO TYPE WITH MICROPROCESSOR-BASED O/C, S/C & INBUILT E/F RELEASES EXCEPT FOR APFC WHICH SHALL BE MDO TYPE WITH THERMAL MAGNETIC RELEASES.
 - IN ALL LT SWITCHBOARDS, CURRENT RATING ABOVE 630A SHALL HAVE ACBs.
 - ALL ACBS SHALL BE WITH ICS=ICU=ICW=100%.
 - b) MCCB
 - 415V SWITCHBOARD INCOMER/ BUSCOUPLER MCCB (>=250A) SHALL BE FP FIXED TYPE WITH MICROPROCESSOR BASED O/C, S/C & E/F RELEASES AND OUTGOING MCCB (>=250A) SHALL BE TP FIXED TYPE WITH MICROPROCESSOR BASED O/C, S/C & E/F RELEASES EXCEPT FOR APFC AND WHICH SHALL HAVE TM BASED O/C, S/C & E/F RELEASES WITH EXTERNAL E/F MODULE. ALL INCOMER/ OUTGOING MCCB (<250A) SHALL HAVE TM BASED O/C, S/C & E/F RELEASES WITH EXTERNAL E/F MODULE.
 - ALL MCCB SHALL BE WITH Ics=Icu=100%.
5. ALL INDICATIONS, SHUNT TRIP/CLOSING COILS OF HT/ LT BREAKERS (VCBS/ ACBS) WILL BE ON 30/110V DC CONTROL SUPPLY. SPRING CHARGING MOTORS OF ALL BREAKERS WILL BE ON 230V AC SUPPLY. IF, DC SUPPLY IS NOT AVAILABLE FROM EXTERNAL SOURCE, IT SHALL BE DERIVED FROM INBUILT DC POWER PACK SUITABLE FOR ACCEPTING 230V AC SUPPLY FROM EXTERNAL SOURCE.
6. IN MCC, ALL MOTOR STARTER COMPONENTS RATING SHALL BE SELECTED AS PER MANUFACTURER'S TYPE-2 CO-ORDINATION CHART. MOTOR STARTERS SHALL BE COMPLETE WITH SINGLE PHASING PREVENTER. AMMETERS IN MOTOR FEEDERS SHALL BE PROVIDED WITH SUPPRESSED SCALE UP TO 6 TIMES FULL LOAD CURRENT FOR INDICATING STARTING CURRENT. ALL MOTOR FEEDERS UP TO OR EQUAL TO 5.5 KW SHALL HAVE DIRECT CONNECTED AMMETERS IN Y PHASE & MOTORS GREATER THAN 5.5KW WILL BE PROVIDED WITH ONE CT & AMMETER.
7. THE ON, OFF AND TRIP POSITION OF MCCB/ MPCB SHALL BE CLEARLY INDICATED. ROTARY OPERATING HANDLE FOR MCCBs/ MPCBs WITH THE DOOR CLOSED INTERLOCK SHALL BE PROVIDED. ALL MCCB/ MPCB FEEDERS ON ALL PANELS SHALL BE PROVIDED WITH ON/OFF/TRIP INDICATING LAMPS THROUGH AUXILIARY CONTACTS. WHEREVER STARTER FEEDER PROVIDED WITH MPCB BUT WITHOUT OVERLOAD RELAY, MPCB SHALL HAVE INBUILT OVERLOAD PROTECTION FEATURE.
8. 110 OR 220V AC CONTROL SUPPLY FOR LT PCC/ MCC SHALL BE DERIVED FROM CONTROL TRANSFORMER(S) OF ADEQUATE RATING. INTERLOCKING BETWEEN TWO CONTROL SUPPLIES SHALL BE PROVIDED SUCH THAT ENERGIZED SECTION CATERS FOR THE NEED OF THE PCC/ MCC PANEL.
9. MCCB & MPCB TERMINALS SHALL BE SHROUDED AND SHALL BE DESIGNED TO RECEIVE CABLE LUGS FOR RELEVANT CABLE SIZES.
10. ALL INDICATING LAMPS SHALL BE MULTICHIP LED TYPE.
11. MULTIFUNCTION METER FOR MEASURING ALL POWER & ENERGY PARAMETERS SHALL HAVE AN ACCURACY CLASS OF 1.0 OR BETTER, WITH RS 485 COMM PORT.
12. ALL CONTACTORS / TIMERS SHALL BE DIN RAIL MOUNTED.
13. UNDER STEADY STATE CONDITIONS, VOLTAGE DROP IN VARIOUS SECTIONS OF ELECTRICAL SYSTEM SHALL BE LIMITED TO A) CABLES BETWEEN TRANSFORMER SECONDARY TO PMCC - 2 % AND B) CABLES BETWEEN PMCC TO MOTOR- 3%. UNDER MOTOR STARTING CONDITIONS, THE CORRESPONDING VOLTAGE DROP SHALL NOT AFFECT THE OPERATION OF THE MOTOR CONTROLS OR THE ABILITY OF THE MOTOR TO START AND RUN EFFECTIVELY AND IN ANY EVENT SHALL NOT EXCEED 15%. FAULT CLEARING TIME TO BE CONSIDERED WHILE SIZING OF CABLES SHALL BE AS A) PCC INCOMER - 1 SEC AND B) TRANSFORMER PRIMARY: 0.16 SEC.
14. UNLESS SPECIFIED, ALL SWITCHBOARDS SHALL BE FREE STANDING, COMPARTMENTALIZED, EXTENSIBLE ON BOTH SIDES WITH HEIGHT NOT EXCEEDING 2300MM. ENCLOSURE PROTECTION OF SWITCHBOARDS SHALL BE AS PER TENDER.
15. WHEREVER APPLICABLE, SEPARATE PANEL FOR HVAC, FIRE AND PLUMPING PUMP WILL BE PART OF RESPECTIVE BOQ.
16. WHEREVER APPLICABLE, PROVISION OF ONE-WAY NET METERING SHALL BE PROPOSED IN THE SLD FOR INTEGRATION OF THE SOLAR WITH THE DISTRIBUTION SYSTEM. THIS METHODOLOGY NEEDS TO BE VERIFIED WITH THE STATE ELECTRICITY BOARD AND THE SOLAR VENDORS. SOLAR POWER SUPPLY WILL NOT BE ON WHEN DG IS ON.
17. WHEN TWO DG'S ARE OPERATING IN PARALLEL THEN PROVISION OF NEUTRAL CONTRACTOR INTERLOCKING SHOULD BE SUCH THAT ONLY ONE DG WILL BE EARTHED.
18. MCB USED FOR STANDARD NETWORK SHALL HAVE 'C' CHARACTERISTIC CURVE.
19. EACH TYPE & RATING OF OUTGOING FEEDER SHALL HAVE 10% SPARE OR MINIMUM ONE NUMBER.

LEGEND:

	LIGHTNING ARRESTER	R	RELAYING
	ISOLATER WITH EARTH SWITCH	I	INSTRUMENTATION
	ISOLATER WITH D.O. FUSE	25	SYNCHRONIZING RELAY
		27/59	UNDER/OVER VOLTAGE RELAY
	CIRCUIT BREAKER(ACB/VCB) DRAW-OUT TYPE	81	UNDERFREQUENCY RELAY
		(50)	INST. O/C PROTECTION
	CIRCUIT BREAKER(ACB/VCB) NON DRAW-OUT TYPE	(50N)	INST. E/F PROTECTION
		(51)	IDMT. O/C PROTECTION
	MCCB	95	TRIP SUPERVISION RELAY
	MPCB	49W	WINDING TEMP. HIGH INDICATOR WITH ALARM & TRIP CONTACTS
	MCB	490	OIL TEMP. HIGH INDICATOR WITH ALARM & TRIP CONTACTS
	CABLE GLAND	(63 X)	PRESSURE RELIEF DEVICE
	INDICATING LAMP	(63 T)	BUCHHOLZ RELAY
	PUSH BUTTON	OSR	OIL SURGE RELAY
	CURRENT TRANSFORMER (CT) (FIGURE INDICATES NO. OF CT's)	MOG	MAGNETIC OIL GAUGE
		86	LOCK OUT RELAY
	POTENTIAL TRANSFORMER	SC	SPRING CHARGED
		TCH	TRIP CIRCUIT HEALTHY
	TRANSFORMER	SP	SERVICE POSITION
		TP	TEST POSITION
	TRI VECTOR METER		ELECTRICAL CABINET
	CHOKE	(MFM)	MULTIFUNCTION METER
	AMMETER SELECTOR SWITCH		
	ANALOG AMMETER		NET ENERGY METER
	VOLTMETER SELECTOR SWITCH		
	ANALOG VOLTMETER		
	PUSH BUTTON STATION	TNC 	TRIP-NEUTRAL-CLOSE SWITCH (KEY OPERATED)
	ELECTRICAL- MECHANICAL INTERLOCK	ETPB	EMERGENCY TRIP PUSH BUTTON
	TWO MOMENTARY CONTACT PB WITH THREE INDICATING LAMPS (R = RED, G = GREEN, A = AMBER)		CONTACTOR
		NC	NORMALLY CLOSED
	LOCAL REMOTE SELECTOR SWITCH	NO	NORMALLY OPEN

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