



**AMENDMENT ON TECHNICAL SPECIFICATION FOR MISC. TANKS PACKAGE
370 MW (109 FB) CCP YELAHANKA**

SPECIFICATION NO.: PE-TS-409-167-A001

AMENDMENT NO # 1

REV. NO. 00

DATE: 11/02/2016

The following modifications with respect to Technical Specification for **Misc. tanks** BHEL's Technical specification no **PE-TS-409-167-A001** shall apply.

Bidder to note that existing clauses/details as appearing in the specification stands deleted and clauses/details as mentioned in "Modified to or Read as" column shall be applicable and complied by the bidder.

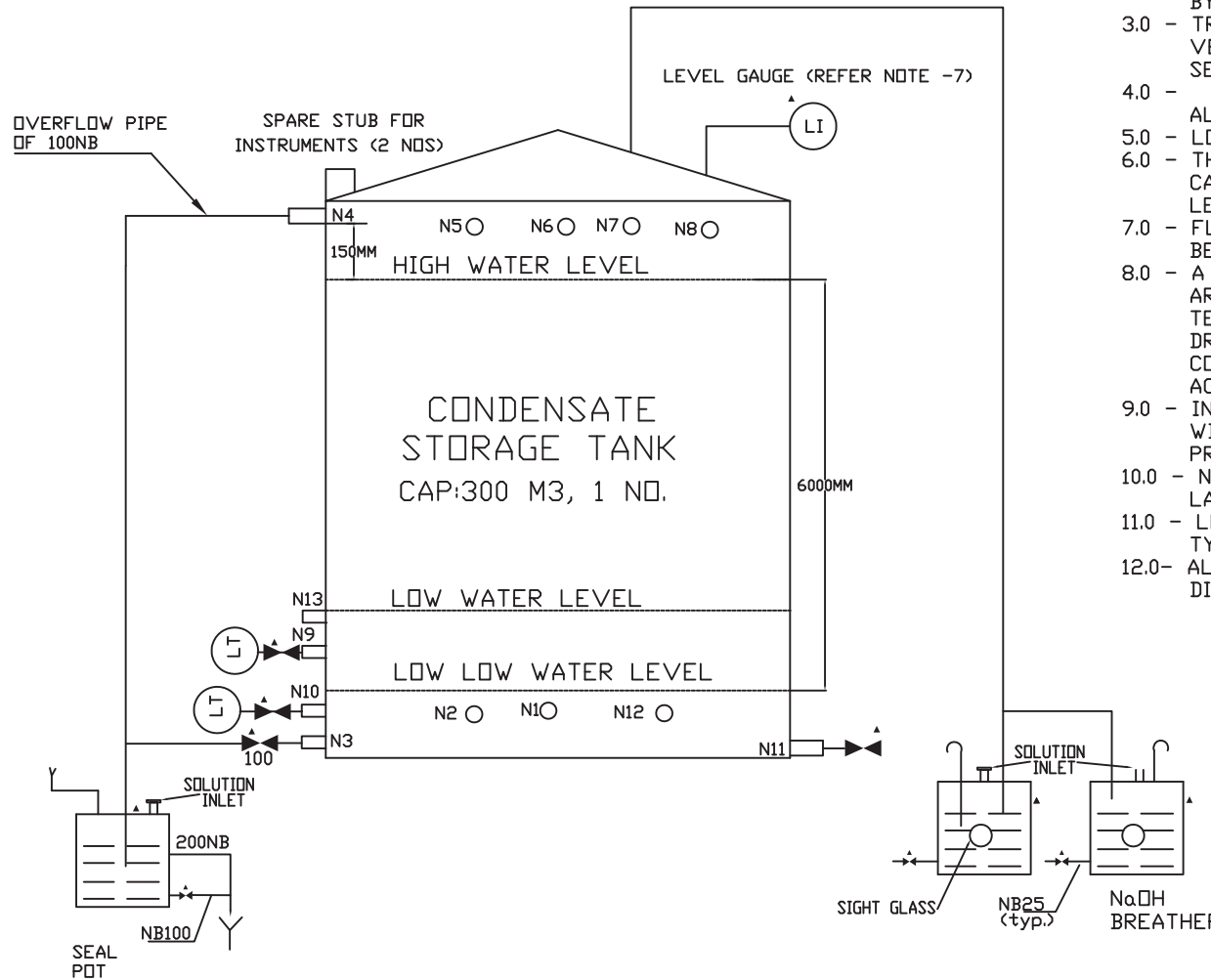
MODIFIED CLAUSES/PAGE NUMBERS.

| SI no. | Vol. No. | Section/ Description | Clause | Page no | Existing clause/details | Modified to or Read as |
|--------|----------|----------------------|--|----------|--|---|
| 1. | IIB | SECTION- C1 | DATA SHEET FOR CONDENSATE STORAGE TANK | 21 of 95 | MATERIAL OF CONSTRUCTION SHALL BE STRUCTURAL STEEL TO IS:2062. | MATERIAL OF CONSTRUCTION SHALL BE STRUCTURAL STEEL CONFORMING TO IS:2062 GR B. |
| 2. | IIB | SECTION - C1 | DATA SHEET FOR CONDENSATE STORAGE TANK | 21 of 95 | DRAIN VALVE FOR SEAL POT - 50NB. | DRAIN VALVE FOR SEAL POT SHALL BE OF SIZE 100NB. |
| 3. | IIB | SECTION - C1 | DATA SHEET FOR CONDENSATE STORAGE TANK | 22 of 95 | INSTRUMENTS / ACCESSORIES REQUIRED- i) FOLLOWING SPARE CONNECTION SHALL BE PROVIDED : 1.2000 NB ONE NO., 2. 100 NB-ONE NO. | INSTRUMENTS / ACCESSORIES REQUIRED- i) FOLLOWING SPARE CONNECTION SHALL BE PROVIDED : 1.200 NB ONE NO., 2. 100 NB-ONE NO. |
| 4. | IIB | SECTION - C1 | SKETCH FOR CONDENSATE STORAGE TANK | 23 of 95 | ---- | SPARE NOZZLE FOR LEVEL TRANSMITTER WITH BLIND FLANGE OF 25 NB SIZE. |
| 5. | IIB | SECTION - C1 | DATA SHEET FOR DM TANK | 24 of 95 | MATERIAL OF CONSTRUCTION SHALL BE STRUCTURAL STEEL TO IS:2062 GR A. | MATERIAL OF CONSTRUCTION SHALL BE STRUCTURAL STEEL CONFORMING TO IS:2062 GR B. |
| 6. | IIB | SECTION - C1 | DATA SHEET FOR DM TANK | 24 of 95 | DRAIN VALVE FOR SEAL POT - 50NB. | DRAIN VALVE FOR SEAL POT SHALL BE OF SIZE 100NB. |
| 7. | IIB | SECTION -C1 | SKETCH FOR DM WATER STORAGEE TANK | 26 of 95 | SECTION - 1, LIST OF DOCUMENTS TO BE SUBMITTED WITH BID | SPARE NOZZLE FOR LEVEL TRANSMITTER WITH BLIND FLANGE OF 25 NB SIZE. |

| BHEL PEM | | DATA SHEET FOR CONDENSATE STORAGE TANK | DOC NO: PE-DG-409-167-A001 |
|----------|---|---|----------------------------|
| | | PROJECT TITLE: 370 MW (109 FBI) CAPP YELAHANKA BANGALORE | REV NO: 00 |
| 1 | SERVICE IDENTIFICATION | CONDENSATE STORAGE TANK | |
| 2 | P&ID NO. | PE-DG-409-100-N110 (BEING SUBMITTED SEPARATELY) | |
| 3 | SYSTEM | DM WATER SYSTEM | |
| 4 | APPLICABLE CODES/STATUTORY REGULATIONS | IS-803/API650 | |
| 5 | CAPACITY | 300 M ³ | |
| 6 | NUMBER REQUIRED | ONE (01) NO | |
| 7 | STORAGE MEDIUM | DM WATER / CONDENSATE | |
| 7a | OPERATING PRESSURE | ATMOSPHERIC PRESSURE | |
| 7b | DESIGN PARAMETER | FILLED WATER HEAD+ATMOSPHERIC | |
| 7c | HYDROSTATIC PRESSURE | FILLED WATER HEAD | |
| 8 | TYPE | VERTICAL, CYLINDRICAL | |
| 9 | SIZE | 8.0 M (DIA) X 7.5 M (HEIGHT) | |
| 10 | PRESSURE CLASS | DESIGN FOR FILLED WATER HEAD / ATMOSPHERIC | |
| 11 | MATERIAL OF CONSTRUCTION | STRUCTURAL STEEL TO IS:2062 GR B CORROSION ALLOWANCE= 3.2 mm INCLUDING MILL TOLERANCE | |
| 12 | MINIMUM PLATE THICKNESS INCLUDING CORROSION ALLOWANCE | BOTTOM - 8 MM, SHELL - 6 MM, ROOF - 6 MM | |
| 13 | COURSE WIDTH OF PLATES | 1.25M/1.5M/1.8M/2.0M AS PER IS:803. (*1.25 M WIDTH PLATES SHALL BE USED ONLY WHEN THE OTHER SIZES AS SPECIFIED (I.E 1.5/1.8/2.0M) ARE NOT AVAILABLE DURING THE EXECUTION OF THE TANKS) | |
| 14 | JOINT EFFICIENCY | 0.85 | |
| 15 | DESIGN TEMPERATURE | 60 °C | |
| 16 | LOCATION OF INSTALLATION | OUTDOOR | |
| 17 | DRAIN VALVE FOR TANK | 100 NB | |
| 18 | DRAIN VALVE FOR NAOH BREATHER | 25 NB | |
| 19 | DRAIN VALVE FOR SEAL POT | 100 NB | |
| 20 | NOZZLE CONNECTIONS REQD / | AS PER ENCLOSED SKETCH | |
| | END CONNECTION | SW FOR SIZE <= NB50 & BW FOR SIZE > NB50 | |
| 21 | PIPE / NOZZLE MATERIAL | STAINLESS STEEL TO SA312 TP 304, SCH 10S FOR > NB50 & 40S FOR <=NB50 (REFER ANNEXURE-III) | |
| 22 | PIPE MATERIAL FOR HAND RAILING | CARBON STEEL, GALVANIZED, MEDIUM GRADE (REFER ANNEXURE-II) | |
| 23 | VALVES MATERIAL | STAINLESS STEEL (REFER ANNEXURE-IV) | |
| 24 | VALVES END CONNECTION | SOCKET WELDED FOR SIZE <= NB50 BUTT WELDED FOR SIZE > NB50 | |
| 25 | INSTRUMENTS / ACCESSORIES REQUIRED | (a) CONSERVATION VENT VALVE /BREATHER (b) OVERFLOW & DRAIN PIPING WITH DRAIN VALVE (c) SEAL POT WITH DRAIN VALVE ETC FOR OVERFLOW (d) LEVEL GAUGE (FLOATING TYPE) WITH FITTINGS (e) 2 NOS TAPPINGS WITH NB 25 ROOT VALVES ON TANK (FOR MOUNTING TWO (02) LEVEL TRANSMITTERS) (f) STEEL STAIRS AND PLATFORMS FOR EXTERNAL APPROACH AND LADDERS FOR ACCESS INSIDE (g) SAMPLING CONNECTION WITH 25 NB VALVE ON TANK (h) 3 NOS INSTRUMENT CONNECTIONS ON TANK ROOF FOR FLOAT AND ARROW TYPE LEVEL GAUGE. (i) FOLLOWING SPARE CONNECTION SHALL BE PROVIDED : 1.200 NB- ONE NO., 2. 100 NB-ONE NO. SPARE VALVE SHALL BE PROVIDED FOR OUTLET SPARE CONNECTIONS AND BLIND FLANGE SHALL BE PROVIDED FOR INLET SPARE CONNECTION. (j) DIP HATCH WITH SCREWED END FITTED WITH BRASS CAP AND CHAIN. | |

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| 26.0 | SURFACE PREPARATION | SAND BLASTED TO SA 2 1/2 AND DRY AIR BLASTED BEFORE PAINTING. SHADE AS PER OWNERS REQUIREMENT. |
| 27.0 | INSIDE PROTECTION & EXTERNAL PAINTING | REFER ANNEXURE- I REGARDING PAINTING SPECIFICATION |
| 28.0 | MANHOLE | TWO (2) NOS. ONE ON SHELL & THE OTHER ON ROOF |
| 29.0 | FUNCTIONAL DEMONSTRATION | FOR FUNCTION DEMONSTRATION OF CST TANKS, WATER RETENTION TEST SHALL BE CARRIED OUT AT SITE DURING COMMISSIONING OF THE TANKS. |
| 30.0 | DRAWING ATTACHED | SKETCH FOR CONDENSATE WATER STORAGE TANK : PE-DC-409-167-S001, REV-01 |
| 31.0 | LIST OF ANNEXURE ATTACHED | ANNEXURE I-PAINING SPECIFICATION, ANNEXURE II- DATASHEET FOR PLATE AND STRUCTURAL STEEL. ANNEXUREIII- DATASHEET FOR PIPES,FITTINGS, FLANGES & ACCESSORIES ANNEXURE IV-SPECIFICATION FOR VALVES ANNEXURE V- SPECIFICATION FOR FLOAT AND ARROW TYPE LEVEL INDICATOR |

SKETCH FOR CONDENSATE STORAGE TANK



NOTES:

- 1.0 - HIGH WATER LEVEL SHALL BE MIN.150MM BELOW BOTTOM OF OVERFLOW NOZZLE.
- 2.0 - ALL NOZZLES (ALONG WITH FLANGES & COUNTER FLANGES), OVERFLOW PIPE, ROOT VALVES FOR LT, NOZZLE FOR MOUNTING LEVEL INDICATOR, ISOLATION VALVES AND SPARE VALVES SHALL BE SUPPLIED BY TANK VENDOR.
- 3.0 - TRANSMITTER SHOWN ARE EXCLUDED FROM TANK VENDOR SCOPE. THESE SHALL BE SUPPLIED SEPARATELY UNDER INSTRUMENTATION PACKAGE.
- 4.0 - ▲ MARKED ITEMS ARE TO BE SUPPLIED ALONG WITH TANK.
- 5.0 - LOCATION OF THE TANK IS OUTDOOR.
- 6.0 - THE NET CAPACITY OF TANK I.E 300 CUM IS CAPACITY BETWEEN LOW LOW LEVEL AND HIGH LEVEL SHOWN IN THIS SKETCH.
- 7.0 - FLOAT & ARROW TYPE LEVEL INDICATOR SHALL BE PROVIDED.
- 8.0 - A CIRCUMFERENTIAL DRAIN SHALL BE PROVIDED AROUND THE CONDENSATE STORAGE TANK FOR TERMINATING THE TANK, SEAL POT & NaOH BREATHERS DRAINS. THE CIRCUMFERENTIAL DRAIN SHALL THEN BE CONNECTED TO NEARBY PLANT DRAIN BY CIVIL AGENCY.
- 9.0 - INLET SPARE CONNECTIONS SHALL BE PROVIDED WITH BLIND FLANGE. SPARE VALVES SHALL BE PROVIDED AT SPARE OUTLET CONNECTIONS.
- 10.0 - NOZZLE ORIENTATION SHALL BE AS PER FINAL LAYOUT.
- 11.0 - LEVEL TRANSMITTER SHALL BE OF DIFFERENTIAL TYPE.
- 12.0- ALL VALVES SHALL BE PROVIDED AT APPROACHABLE DISTANCE.

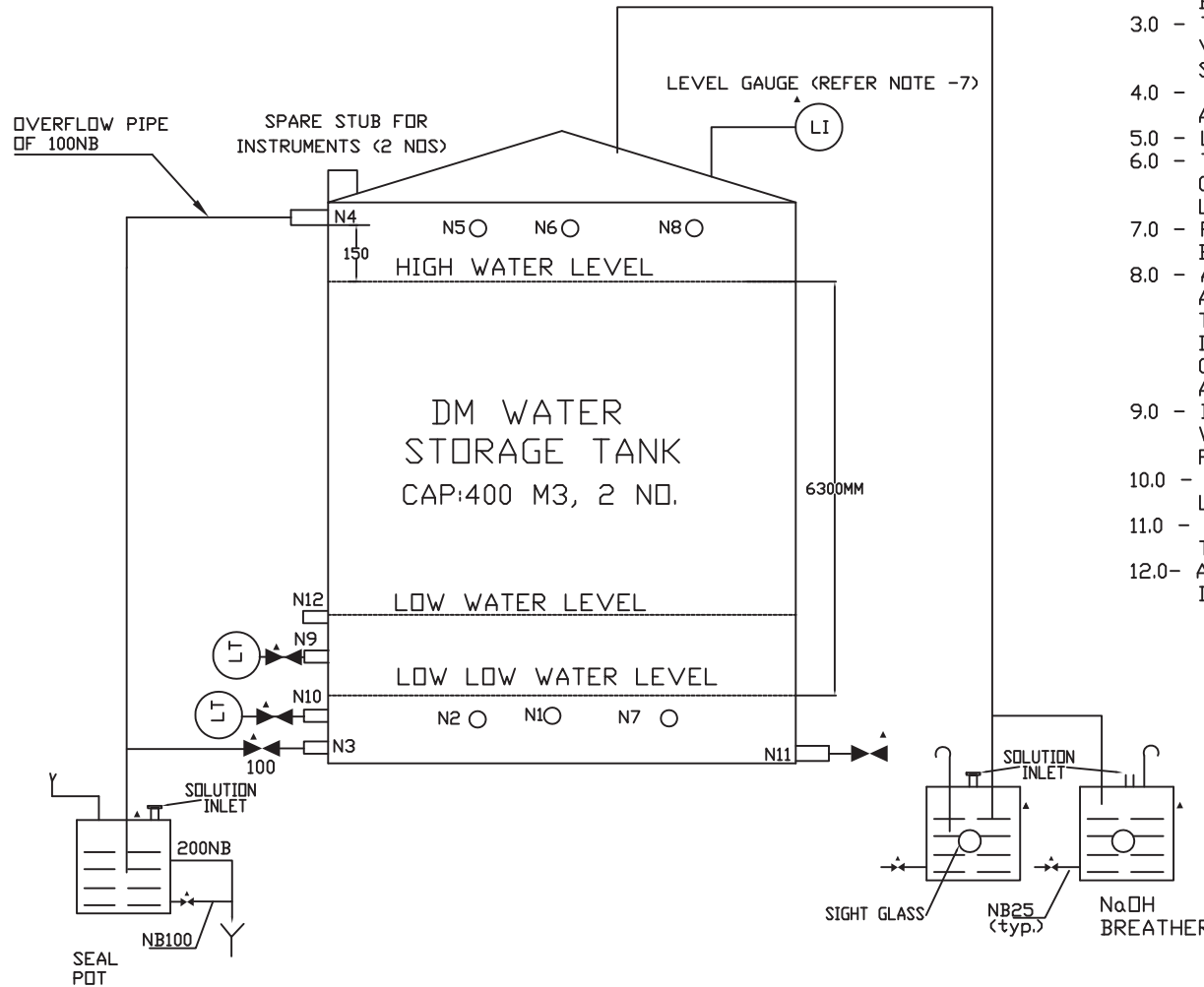
| NOZZLE NO. | DESCRIPTION | SIZE (NB) |
|------------|--|-----------|
| N1 | HRSG FILL PUMP SUCTION / HOTWELL MAKEUP PUMP SUCTION | 200 |
| N2 | SPARE WITH NOZZLE | 100 |
| N3 | DRAIN WITH VALVE | 100 |
| N4 | OVERFLOW | 100 |
| N5 | DM WATER INLET | 50 |
| N6 | HOTWELL MU PUMP RECIRCULATION | 25 |
| N7 | HRSG FILL PUMP RE-CIRCULATION | 80 |
| N8 | CONDENSATE EXCESS RETURN | 100 |
| N9&N10 | NOZZLE FOR LEVEL TRANSMITTER | 25 |
| N11 | SAMPLING CONNEC. WITH VALVE | 25 |
| N12 | SPARE WITH NOZZLE | 200 |
| N13 | SPARE NOZZLE FOR LEVEL TRANSMITTER WITH BLIND FLANGE | 25 |

DIM. OF TANK - 8.0M DIA x 7.5M HT.

| BHEL PEM | DATA SHEET FOR DM WATER STORAGE TANK | DOC NO: PE-DC-409-167-A001 |
|----------|---|---|
| | PROJECT TITLE: 370 MW (109 FB) CCPP YELAHANKA,BANGALORE | REV NO-00 |
| 1 | SERVICE IDENTIFICATION | DM WATER STORAGE TANK |
| 2 | PAID NO. | PE-DG-409-100-N110 (BEING SUBMITTED SEPARATELY) |
| 3 | SYSTEM | DM WATER SYSTEM |
| 4 | APPLICABLE CODES/STATUTORY REGULATIONS | IS-803/AP1650 |
| 5 | CAPACITY | 400 M ³ |
| 6 | NUMBER REQUIRED | TWO (02) NO |
| 7 | STORAGE MEDIUM | DM WATER |
| 7a | OPERATING PRESSURE | ATMOSPHERIC PRESSURE |
| 7b | DESIGN PARAMETER | FILLED WATER HEAD+ATMOSPHERIC |
| 7c | HYDROSTATIC PRESSURE | FILLED WATER HEAD |
| 8 | TYPE | VERTICAL, CYLINDRICAL |
| 9 | SIZE | 9.0 M (DIA) X8.0 M (HEIGHT) |
| 10 | PRESSURE CLASS | DESIGN FOR FILLED WATER HEAD / ATMOSPHERIC |
| 11 | MATERIAL OF CONSTRUCTION | STRUCTURAL STEEL TO IS:2062 GR-B CORROSION ALLOWANCE= 3.2 MM INCLUDING MILL TOLERANCE |
| 12 | MINIMUM PLATE THICKNESS INCLUDING CORROSION ALLOWANCE | BOTTOM - 8 MM, SHELL - 6 MM , ROOF- 6 MM |
| 13 | COURSE WIDTH OF PLATES | 1.25M*1.5M/1.8M/2.0M AS PER IS:803. (*1.25 M WIDTH PLATES SHALL BE USED ONLY WHEN THE OTHER SIZES AS SPECIFIED (I.E 1.5/1.8/2.0M) ARE NOT AVAILABLE DURING THE EXECUTION OF THE TANKS) |
| 14 | JOINT EFFICIENCY | 0.85 |
| 15 | DESIGN TEMPERATURE | 60 °C |
| 16 | LOCATION OF INSTALLATION | OUTDOOR |
| 17 | DRAIN VALVE FOR TANK | 100 NB |
| 18 | DRAIN VALVE FOR NAOH BREATHER | 25 NB |
| 19 | DRAIN VALVE FOR SEAL POT | 100 NB |
| 20 | NOZZLE CONNECTIONS READ / END CONNECTION | AS PER ENCLOSED SKETCH SW FOR SIZE <= NB50 & BW FOR SIZE > NB50 |
| 21 | PIPE / NOZZLE MATERIAL | STAINLESS STEEL TO SA312 TP 304, SCH 10S FOR > NB50 & 40S FOR <=NB50 (REFER ANNEXURE-III) |
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| 30.0 | DRAWING ATTACHED | SKETCH FOR DM STORAGE TANK : PE-DC-409-167-S002. REV-01 |
| 31.0 | LIST OF ANNEXURE ATTACHED | ANNEXURE I-PAINTING SPECIFICATION. ANNEXURE II- DATASHEET FOR PLATE AND STRUCTURAL STEEL. ANNEXUREIII- DATASHEET FOR PIPES, FITTINGS, FLANGES & ACCESSORIES ANNEXURE IV-SPECIFICATION FOR VALVES ANNEXURE V- SPECIFICATION FOR FLOAT AND ARROW TYPE LEVEL INDICATOR |

SKETCH FOR DM WATER STORAGE TANK



NOTES:

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- 11.0 - LEVEL TRANSMITTER SHALL BE OF DIFFERENTIAL TYPE.
- 12.0- ALL VALVES SHALL BE PROVIDED AT APPROACHABLE DISTANCE.

| NOZZLE NO. | DESCRIPTION | SIZE (NB) |
|------------|--|-----------|
| N1 | DM TRANSFER PUMP SUCTION | 80 |
| N2 | DM PLANT REGENERATION | 80 |
| N3 | DRAIN WITH VALVE | 100 |
| N4 | OVERFLOW | 100 |
| N5 | DM WATER INLET | 80 |
| N6 | DM TRANSFER PUMP RECIRCULATION | 25 |
| N7 | SPARE WITH NOZZLE | 100 |
| N8 | SPARE WITH NOZZLE | 80 |
| N9&N10 | NOZZLE FOR LEVEL TRANSMITTER | 25 |
| N11 | SAMPLING CONNec. WITH VALVE | 25 |
| N12 | SPARE NOZZLE FOR LEVEL TRANSMITTER WITH BLIND FLANGE | 25 |

DIM. OF TANK - 9.0M DIA x 8M HT.